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OF

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CONTAINING

FULL DESCRIPTIONS OF THE PRINCIPLES AND DETAILS OF

EVERY NEW PATENT,

ALSO

Original Communications

ON OBJECTS CONNECTED WITH

SCIENCE AND PHILOSOPHY,

PARTICULARLY SUCH AS EMBRACE THE MOST RECENT

INVENTIONS AND DISCOVERIES

IN

Practical Mechanics.

BY W. NEWTON,

CIVIL ENGINEER AND MECHANICAL DRAFTSMAN:

AND BY C. F. PARTINGTON,

OF THE LONDON INSTITUTION.

VOL. II.

[SECOND SERIES.]

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NEW SERIES.

I. Shuttleworth's excentric chuck and rest; Wilson's machine for cleaning rice; Quarrill's improved lamp; and Clegg's improved steam engine.
II. Johnson's salt pans; Robinson's improved brushes; Seidler's machinery for drawing water from mines; Mill's improved fire arms; De Berenger's powder flask; and Busk's propelling apparatus.
III. Barlow's power engine; Williams's surgical instruments; Berollas's alarum watch; Hindmarsh's capstan; and Hall's steam apparatus.
IV. Harseleben's apparatus for cleansing ores; Marriott and Siebe's hydraulic engine; and Coggin's dibbling machine.
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VI. Costigan's steam apparatus; and Parker's improved lamp.
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No. VII.

[SECOND SERIES.]

Original Communications.

ART. I.—ON PROTECTING THE GENIUS AND INDUSTRY OF THE BRITISH MECHANICS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN—Amongst the many objects of internal improvement, to which the attention of Government may, in a state of profound peace, be advantageously directed, there is scarcely one which so justly challenges a decided consideration as the means by which the mechanical talent of the community may be most effectually and beneficially exerted. A state of war is not favourable to internal and systematic ameliorations. The best disposed and most enlightened administration will have, during the pressure of foreign conflict, its energies necessarily and exclusively directed to the continually varied and mighty events, which, in their immediate or remote consequences, involve the destinies, or even shake the foundations of the most powerful empires.

During such a period the revenue of a country is raised upon objects which readily present themselves to financial acumen and tact, rather than upon a principle of investigation of the most efficient means by which the resources of the nation may be connected with individual prosperity. The consequence is, that war is doubly oppressive upon a civilised country, although it be preserved from its immediate horrors and devastations. The taxes must be raised upon the ingenuity and labour of the community, whilst that very talent and industry have been left without adequate protection and encouragement from the Government.

The state of settled peace, which we have for years enjoyed, has afforded various administrations the opportunity of earning renown far beyond that of the laurelled victor, by gradually and systematically improving various parts of our internal economy, to the great satisfaction of reasonable men.

But there is one most important and absolutely necessary amelioration, to which by some fatuity the attention of Government seems scarcely to have been publicly called, although there is none that can interest the public more universally. I allude to the great improvement which would accrue to the condition of the mechanical and inventive portion of the community throughout this extensive empire, by giving to talent and industry an entirely different protection from what is received under the present system of granting Chancery Patents for inventions.

The oppression and inefficacy of this system are incalculable; as it regards the rights and just claims of individuals, it is a system of mere rapine and extortion, and what is worse, of absolute insecurity and heart-rending uncertainty to the patentee, after he has submitted to the excessive cost in purchasing an exclusive right, which he may probably be ruined in attempting to maintain.

As the system respects the public, it sits brooding like a *horrid incubus* over the talent, energy, industry, and enterprise of the thousands and hundreds of thousands, who form the mental, mechanical, and operative strength of this vast community.

As a source of revenue, there is not a single branch or mode of abstraction from the means and labour of the people so little available to the public treasury, as is the amount of fees and perquisites (enormous as they are) which is paid, from presenting the petition and affidavit of a new invention, up to the sealing and delivery of that Chancery humbug* called a Patent, for the *security* of the invention.

In vain, does theoretic science extend the human faculty; in vain does practical experience linger for the moment when it may exert itself for the exclusive profit of its possessor; in vain does patient industry, united to talent, hope for the means of successfully and securely prosecuting the labored improvement; *they are not within his reach.*

From three to nearly four hundred pounds is to be paid for protecting the invention, distributed in innumerable fees of office, before patents can be obtained for England, Scotland, and Ireland. Need I say, this presents an impassable barrier to the developement of genius?

---

* I need not crave pardon for the use of that pithy although inelegant term, humbug, as it has been long a parliamentary phrase, both in the Corinthian and Doric house. I apprehend in the next *good* Dictionary to be published, we shall have the word inserted, *naturalis et indigens*, with its popular parliamentary, political, and philosophical signification.

Few are found, that will make the necessary enormous advance on behalf of a needy projector, without full information and knowledge of the invention; that information cannot be given without danger, and probable loss of the invention communicated. Thus, thousands of useful inventions are silently entombed with their possessors, the progress of art and practical science is immeasurably impeded,—talent and genius are without adequate encouragement,—the strength, industry, and activity of the country is proportionately depressed, and finally, the *revenue*, which might be raised with reciprocal advantage to government and to the people, is lost to the treasury.

And all this mass of unlimited evil and oppression is permitted—for what? That a few officers may have their exorbitant fees for doing nothing, and that a system, which originated in the worst and most arbitrary period of our history, may be continued.

Surely it is time for a wise and politic government to exert its powers, and present a remedy for this system of folly and indescribable evil.

A more particular detail of the charges and effects of this absurdly called protection, and some suggestions as to the nature of an efficacious remedy, will form the subject of a future communication.

I am, Gentlemen, &c.
"VINDICATOR."

ART. II.—ON ORNAMENTAL TURNING. BY M. H. SHUTTLEWORTH, ESQ.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN—Resuming the subject of my preceding paper (see page 321, vol. I) I shall treat, in the first instance, of the slide rest. In the present case, a neces-

Shuttleworth's excentric chuck & rest

Fig. 1.

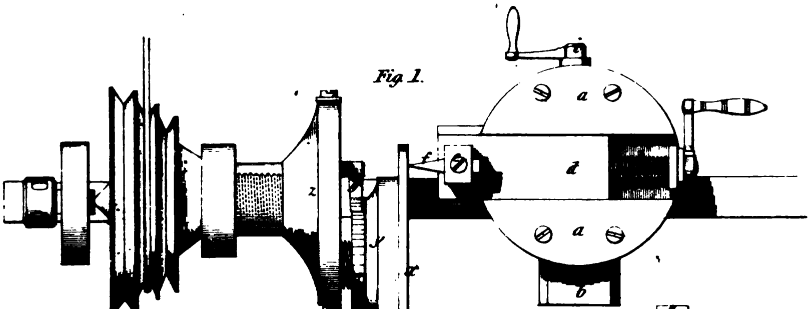
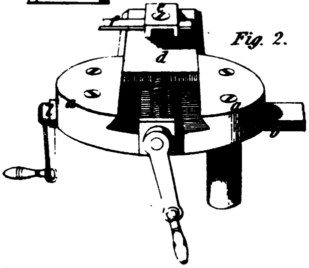


Fig. 2.



Wilson's Machine for cleaning rice

Fig. 4.

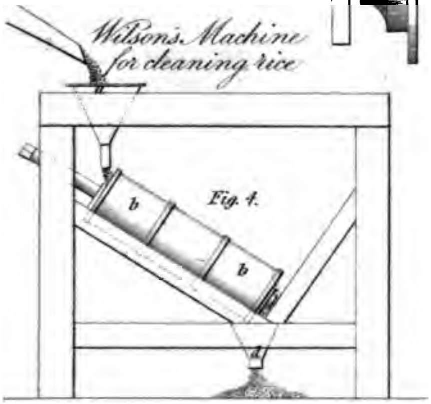
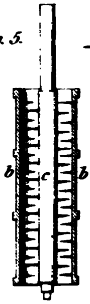


Fig. 5.



Quarrills imp.

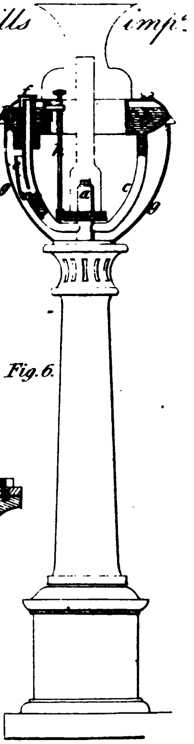
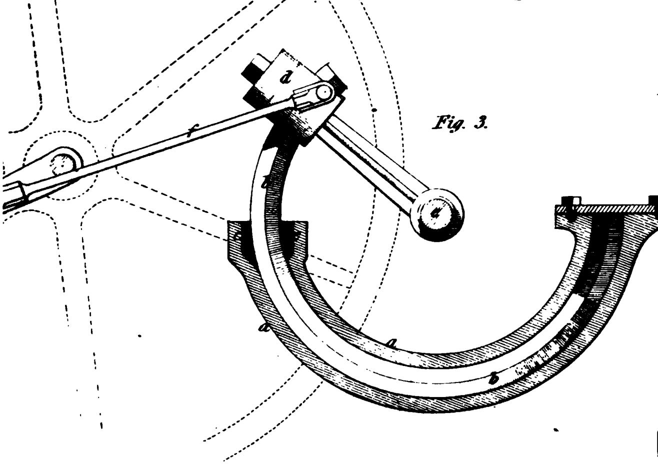


Fig. 6.

's Imp.d Steam Engine

Fig. 3.



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sary but simple instrument, being only calculated for what is termed and known among watch manufacturers in particular, under the denomination of engine-turning; but when extended to turning screws, cones, and as in the exquisite machinery of Mr. Brunel at Portsmouth, for the manufacture of blocks for the British navy, globular and elliptical bodies, it assumes a much more complicated form, and is described in many excellent mechanical works, to which I refer such of your readers as may wish to construct a superior apparatus.

It is evident, that few workmen can possess a hand sufficiently firm to guide the delicate tool, a fine steel point, which in addition to an undeviating steadiness, requires being drawn back from the work after each circle is completed. The most trivial alteration in its situation, when again projected, would totally destroy all symmetry, and cause an irreparable injury to the article. Few artizans have so true an eye, as even by the aid of the strait edge, to turn a correct cylinder, either internally or externally, or render the surface to be ornamented a perfect plane, which is highly requisite, and indeed indispensible to the beauty of the design, as otherwise the engraving will be unequal, and sometimes wholly deficient, all which difficulties are entirely remedied by the slide rest, even in its most simple form, as will be made clear in the course of these papers.

My rest consists of the following parts. See plate 1, fig. 1 and 2:—

a, the body, of the rest.—*b*, the parallel, or under slide—*c*, the leg affixed to the under slide.

d, the transverse or upper slide, to which is fixed the holdfast or receiver for the tool *e*; and *f*, is the printed engraving tool, chisel or gouge. Its application will be rendered more intelligible by the perspective representation, fig. 2, of which a brief explanation will suffice.

The lathe is of the ordinary construction, having an excentric chuck *z*, made in the manner described in my former paper; *y*, is the wooden chuck, carrying the lid of a snuff box *x*, or any other work to be engine-turned on its surface. This wooden chuck has the ratchet wheel *w*, affixed to it, and is mounted by its stem in the slide of the chuck *z*.

The leg *c*, of the rest must fit tight into the foot of the rest, and be secured by a screw in the usual way. The body *a*, has two grooves at right angles to each other, and in which the slides *b*, and *d*, advance or recede by the revolving screws *i*, and *h*, which may be turned by a screw-driver, or what is better, although more expensive, by small winches.

Now *b*, moving parallel to the face of the chuck, or the surface to be engraved, by means of the screw *i*, regulates the distance of the point *f*, from the centre of the chuck or surface fastened thereon, and consequently the size of the circles, and when once properly adjusted, requires no alteration. But to advance the tool *f*, to the work, the screw *h*, must be turned, and when each circle is completed, it must be withdrawn till the chuck is turned round and adjusted for the engraving a fresh one; when it must be projected as before, and proceed in the same way till the design is perfected, which will consist of as many circles as there are teeth in the ratchet-wheel *g*, which must be turned round one tooth for each circle; or any number of teeth may be taken, by which the whole may be divided without a fractional remainder, and with taste and skill may be productive of a great variety of embellishments.

The application of the rest to cylindrical turning, either internal or external, is easily understood; the chisel or gouge *f*, being fixed in the holdfast, is moved along the k by the screw *h*; for it must be understood that the holdfast has two channels at right angles to each other, by which means the tool may be directed, as shown in the plate, of which fig. 1, represents the tool adjusted for engine or face turning, and fig. 2, for cylindrical purposes. In boring a cylinder, if the diameter be too narrow to admit the slide *d*, a tool must be made for the purpose, or I believe, may be procured at any manufactory of turning implements; and the tool, once fixed, cannot swerve, and therefore remedies the defect before mentioned, as is apparent upon the least reflection. I may hereafter describe some further uses of this rest and chuck, but shall at present conclude, reserving directions for making the apparatus, simple and moderate in price, till a further opportunity.

Yours, &c.
M. H. SHUTTLEWORTH.

Tottenham Green, Sept. 17, 1828.

Note.—By an error in the drawing, referred to in the preceding paper, fig. 2, plate 15, the box lid has been omitted, and the face of the chuck lettered to correspond with the letter-press. The reader will therefore refer to the above fig. 1, plate I, which gives the edge view of the excentric chuck; and on comparing the two, he will be enabled to correct the mistake.

The letters *b, a*, in fig. 1, plate 15, should have been engraved in a line with *C, D, h*.

The models of the chuck and slide rest are in possession of the Editors, and may be examined upon application to Mr. Partington, at the London Institution.

Recent Patents.

To SAMUEL CLEGG, *of Chapel Walk, Liverpool, Civil Engineer, for his Invention of certain Improvements in the Construction of Steam Engines, Steam Boilers, and Generators.*—[Sealed 20th March, 1828.]

THIS invention consists, first in a peculiarity in the construction of the working cylinder of a steam engine, and secondly in a mode of placing generators within a furnace, so that they may supply themselves with water, as occasion shall require.

The working cylinder, or rather the apparatus which is employed in its stead, is to be ring formed, or circular, not straight, as cylinders usually are; and the piston is to reciprocate in a circular direction, instead of moving to and fro, in a right line.

Plate I. Fig. 3. shews a section of the part called by the Patentee the working cylinder, *a, a,* which is not only peculiar in its semicircular form, but is made quadrangular in its sectional figure. The piston *b,* is also quadrangular, and is bent into the form of a segment of the same circle as *a.* This square form is preferred, as more convenient for the adaptation of metallic packing, (supposing the engine is to be worked at high pressure) than a round piston would be.

The rod of the piston is continued its whole lengh of the same form and dimensions as the piston itself, and it is to be extended through an arch of 180 degrees, more or less, as may be most convenient; but a segment, equal to half the circumference is preferred, because that will admit of the longest stroke. The chamber is to be packed at the open end by a stuffing box *c*, *c*, in the way pistons are usually made steam tight at the joints.

The outer extremity of the piston rod is connected to an arm *d*, fixed to an axle *e*, in the centre of the segment; and by the reciprocating action of the piston to and fro, in its circular chamber, the arm *d*, is made to vibrate upon its axle.

It is proposed to work the piston by high pressure steam, which is admitted into the chamber *a*, by an induction valve, in the ordinary manner; and when a certain quantity of steam has passed into the chamber, the valve is to be closed and the steam allowed to expand, for the purpose of driving the piston to the end of its stroke.

There are weights *d*, attached to the outer end of the piston rod, in order to balance it, and make the pressure upon the engine uniform—that is when the steam begins to act, exerting its greatest force,the weights will be lifted, nd by their gravity impede the action, but diminishing in effect, as the volume of steam expands in the chamber; and when the weights have passed the perpendicular point, their gravity on the opposite side will assist the diminishing power of the steam, and aid the action of the engine.

Two or more of these working segments with pistons may be adapted to an engine, and a lever *f*, being attached to the end of each piston rod, and to a cranck on the fly wheel axle, will communicate the reciprocating actions of the pistons, to the operative parts of the engine.

It is unnecessary to exhibit a complete engine in the specification, because the improved segment chamber and its piston are all the novelties claimed as new with respect to the engine. The opening and closing of the induction and eduction valves, may be effected in any of the ordinary modes, by rods connected to the working piston; and the other details of the engine may be arranged as circumstances shall dictate.

The second feature claimed under this Patent, is a mode of supplying water to the boiler or generator of a steam engine, in such quantities as may be required for the continual production of steam. The generator is proposed to be made of tubes; any number may be placed in a horizontal series, and they are to be so mounted within the furnace, that they may be enabled to rise and fall, as levers upon pivots, balanced by a weighted lever above.

The generators are, in the first instance, to be half filled with water, by means of an injecting, or force pump; the weight of which quantity of water, together with that of the generator, is to be exactly balanced by the weight on the lever above; in the same way as the weighted lever of an ordinary steelyard. On the water in the generators becoming evaporated, and driven off in the form of steam, the generators will become lighter, and consequently rise upon their pivots, which act of rising moves a small rod, which opens a valve, something in the way of an ordinary float or ball cock, from the cistern or reservoir, and allows a quantity of water to flow into the generators, until their increased weight causes the generators to descend again upon their pivots, and to close the water valve.

In this manner, by the proper adjustment of the weight on the steelyard or balance lever, a suitable quantity of water will be at all times introduced into the generators, and any variation in the quantity caused by evaporation, immediately corrected, as well as the admission of more than the necessary quantity effectually prevented.

The Patentee states that this part of the invention may be constructed and put into a working condition in various ways, which would readily suggest themselves to every Engineer; he therefore desires it may be understood that he claims the invention of causing the generators to supply themselves with a suitable quantity of water, and to regulate that quantity by rising and falling of their pivots or an axle, as their weight decreases or increases, the whole being balanced by a weighted lever properly adjusted; and the rising and falling action of the generators, causing the valve through which the water is supplied to be opened or shut, as may be required.—[*Inrolled September*, 1828.]

To JOSEPH ROBINSON, *of Merchant's Row, Limehouse, in the County of Middlesex, Brush-maker, for his Invention of an Improvement in the Manufacture of Brushes of certain Descriptions, and the application thereof to the Manufacture of Brushes and other purposes.*—[Sealed December 4, 1827.]

THE particular features of novelty proposed under this Patent are, first, a new mode of arranging the bristle in the manufacture of that description of brushes called dusters and ground brushes, and also in the flat brushes, used by white-washers; second, in a new cement, to be employed for securing the back parts of the bristles; and third, the application of the plan as a novelty in the manufacture of brushes.

It is proposed to take about half the quantity of bristles intended to form the brush, and to draw them through a ring, which is conically formed within, as shewn by dots in Fig. 3, Plate II. When this is done, the bristles being set so as to stand nearly of the same length, the ends are to be tied up to confine them, and the remaining quantity of bristles are to be placed round the previously secured brush. The back part of the bristles are now to be dipped into cement, for the purpose of holding them, and a ferule passed over them, as at Fig. 4, when the handle, Fig. 5, may be introduced, and its stem made fast within the ferule by means of the cement.

Flat brushes, for white-washers, may be made by connecting several of these rounded ones together, side by side, or the bristles may be held by a flat ring, as Fig. 6; two thirds of the bristle being confined within the ring, and the remainder placed outside, and connected as described.

The cement proposed to be employed, is to be compounded of two-fifths of rosin, melted over a slow fire, into which one-fifth of the quantity of plaster of Paris is to be introduced, and well mixed by stirring; then add two-fifths of shell-lac, and the whole being in a fluid state, constitutes the improved cement claimed.—[*Inrolled June,* 1828.]

To Melvil Wilson, *of Warnford Court, Throgmorton Street, in the City of London, Merchant, in consequence of a communication made to him by a certain Foreigner residing abroad, for an Invention of certain Improvements in Machinery for Cleaning Rice.*—[Sealed December 20, 1826.]

The machine described in the specification of this Patent, consists of a hollow cylinder, with a great number of points or teeth projecting inwards, and a shaft passing through the middle of the cylinder, also containing teeth, which shaft is intended to revolve rapidly at the time that the rice is passing through the cylinder, for the purpose of separating the grains of rice, in case of their adhering together, and breaking off any husk or other matter which may be in connection with the rice.

Plate I. Fig. 4. is a side view of the machine; *a*, is a hopper, receiving the rice from a shute, and conducting it down into the cleaning cylinder *b*. This cylinder is shewn in the section, at Fig. 5, with the shaft *c*, passing through it.

The Patentee proposes that there should be about eighty teeth in the cylinder, and that they should project, so as to reach within a very short distance of the central shaft; and that a corresponding number of teeth should be inserted in the shaft, so as to pass freely between those of the cylinder, within very small distances.

The cylinder may be placed horizontally, or vertically, or inclined, as in Fig. 4, which position is to be preferred, and may be mounted in frame work, in any way that may be found convenient. The central shaft is to be put in rapid rotary motion, and the cylinder turned slowly in an opposite direction. The rice being now allowed to descend from the hopper into the cylinder, the teeth or points, as they pass each other, will separate the grains and clean them; and the rice being discharged at the lower end of the cylinder, will fall into a shute *d*, which conducts it to the ground.

This apparatus, or machine, may be driven by hand, or by steam, or water power, and the necessary gear-work, which may be required to drive it, may be readily applied by any mill-wright.—[*Inrolled June*, 1827.]

To WILLIAM JOHNSON, *of Droitwich, in the County of Worcester, Gentleman, for the Invention of certain Improvements in the Mode or Process and Form of Apparatus for the Manufacture of Salt, and other Purposes.*—[Sealed 18th December, 1826.]

THE improvements proposed are, 1st. To crystalize or produce fine salt by the evaporation of brine or saline liquid, through the agency of high pressure steam, in a close shallow vessel; 2dly. The moving or working of rakes or scrapers within the closed vessels or boilers, by means of machines actuated by steam power; 3dly. Obtaining and employing of steam raised from boiling brine to the heating of other vessels; 4thly. The employment of steam as a heating medium, for the production of British bay salt; and 5thly. Such an arrangement of the boilers as shall produce a large quantity of steam, to be applied to the above purposes.

The Patentee has appended to his specification, in order to illustrate the objects expressed above, an extremely rude outline sketch (see Plate II. fig. 1), from which we are enabled to collect very little information as to the real construction of the improved apparatus proposed.

The boiler *a*, is formed into three compartments, one above the other, by which means steam of a high temperature is raised by the action of the fire on the lower part of the vessel, this steam heating the vessel immediately over it, and so on; which is a contrivance described in the specifications of patents, obtained by the present Patentee some years back, and here referred to. (See the First Series of our Journal, Vols. VI. and X.)

From the lower compartment of the boiler *a*, a pipe *b*, leads to the shallow vessel *c*, which is a close box, heated by the steam thus passed into it, for the purpose of causing the brine in the upper vessel *d*, to boil. This vessel is closed by a waggon shaped top, and the steam evolved during the boiling proceeds from thence by the pipe *e*, to another vessel *f*, for the purpose of performing a similar operation.

In the bottoms of the vessels *d*, and *g*, there are recesses formed, into which the salt, as it becomes crystalized, is to be drawn by scrapers or rakers, which are to be moving continually, by means of handles or rods passed through stuffing boxes in the sides of the vessels, the handles of the scrapers being connected to the moving part of a steam-engine.

This is all the information we are enabled to give as to the construction of the apparatus, the sketched representation being, as we have above said, so extremely rude and inefficient.—[*Inrolled June*, 1827.]

To THOMAS QUARRILL, *of Peter's Hill, Doctor's Commons, in the City of London, Lamp Manufacturer, for his Invention of certain Improvements in the Manufacture of Lamps.*—[Sealed 20th December, 1826.]

THE improvements which constitute the subjects of this patent apply principally to table-lamps, and are designed to regulate the flow of the oil to the burner with greater equality than has been effected in any of the contrivances for table-lamps heretofore adopted, and also an improved mode of raising or lowering the wick.

Plate I. fig. 6, represents a pedestal lamp for the table, the form of which may be varied according to taste or fashion. The upper part is shewn partly in section, in which *a*, is the burner and wick, made in the ordinary way, *bb*, is the vessel or reservoir containing the oil, which is conducted to the burner through the tube *c*. There is a corresponding tube *d*, on the opposite side, in which the oil rises to the same height as in the burner.

Connected with this last-mentioned tube, there is a small lateral pipe *e*, for the admission of atmospheric air into the oil vessel, which rising through the upper part of the tube *d*, discharges itself into the inverted cylindrical vessel *f*, and from thence passes through the oil to the upper part of the reservoir, where it acts upon the surface of the oil, and forces it through the tube *c*, to the supply of the burner.

The oil being thus conducted to the burner, flows up the tube *d*, until it closes the air passage between the lateral pipe *e*, and the upper tube, consequently the volume of air contained between the surface of the oil in the reservoir and the top of the vessel cannot now be augmented, because the aperture is closed by the oil.

Thus situated, the air in the reservoir becomes in some degree rarified, and expanded by the heat of the burner, and presses upon the surface of the oil with an increased force, but the passage for the atmospheric air being closed, as described, the oil is prevented from flowing over the edge of the burner, or of spilling, if the lamp is carried about.

The lamp and the tubes being enclosed at the lower part by a glass vase, *gg*, it is necessary in order to raise or lower the wick that some contrivance should be applied within reach to turn the gallery or rim, which is connected to the burner, and carries the glass chimney, as usual. This is effected by placing a toothed rim round the edge of the gallery, and applying a pinion at the lower part of the upright rod *h*, which may be turned, on raising the upper glass, by a rose head at top.

These contrivances will apply to some other descriptions of lamps beside that exhibited in the figure; the Patentee, therefore, claims the contrivances to whatever description of lamp they may be adapted in these words: "First, The new shaped oil vessel, contrived for the introduction of an air-chamber or reservoir, and for sealing the same; secondly, A mode of rarifying the air that regulates the float or flow of the oil, which prevents its overflowing or spilling; thirdly, The rack round the glass holder, by means of which the cotton is raised.—(*Inrolled June*, 1827.)

To Charles Seidler, *of Crawford Street, Portman Square, in the County of Middlesex, Merchant, in consequence of a Communication made to him by a Foreigner residing Abroad, for his having discovered a Method of drawing Water out of Mines, Wells, Pits, and other Places.*—[Sealed 20th December, 1826.]

The proposed improvement in raising water from mines, wells, and other places considerably beneath the surface of the earth, consists principally in employing condensed air as a mechanical agent acting upon the surface of the water below, for the purpose of forcing it up the rising main connected with the pump.

Plate II. fig. 2, shews a sort of diagram or sketch of the apparatus in operation, supposing it to be employed in raising water from a deep well or pit, or through a fissure in the rock, or up the shaft of a mine.

The apparatus consists of an air pump at top of the well, and a tank at bottom, connected together by pipes or tubes of leather, like engine-hose, or of any other suitable material; *aa*, is the working cylinder of the air-pump; *b*, the piston; *c*, a valve-box, with a rotatory valve, which on being turned round, changes the communications of the air-pump from one pipe to the other; *d*, is an air-pipe leading from the pump to the chamber *e*, of the tank below; *f*, is a similar pipe, leading from the pump to the other chamber *g*, of the tank; and *h*, is the rising main or tube, through which the water is raised from the pool at bottom to the shute or discharging trough *i*.

Let it be supposed that the piston *b*, of the air-pump is now in the act of rising, the air which follows it will be drawn into the lower part of the cylinder *a*, through the valve-box *c*, and pipe *d*, from the chamber *e*, of the tank below; consequently, from the exhaustion of air, the water will flow up, and fill the chamber *e*. The valve, *c*, must now be turned round, so as to open the communication between the upper part of the cylinder *a*, and the chamber *g*, of the tank, through the pipe *f*, when the descent of the piston *b*, will condense the air in the lower part of the cylinder, and force it through the pipe *d*, into the chamber *e*, of the tank, which will consequently expel the water from the chamber *e*, and force it up the rising main *h*, at the same time the air will be drawn from the chamber *g*, into the upper part of the cylinder, and the water will follow so as to fill the chamber *g*, in the same way as described with reference to the chamber *e*. In this way, by the action of the piston *b*, and the shifting of the valve *c*, the water will be progressively forced up the rising main *h*.

It will be perceived, that the action and reaction do not in this case balance each other, but that the larger volume of air occupying the cylinder *a*, being condensed and forced into the small chamber *e* or *g*, of the tank, will, by its elastic force, raise the water in the way described. One particular advantage attendant upon this arrangement is, that the pipes or hose leading from the pump to the tank can be twisted or contorted through any meandering passages, and to any extent, without inconvenience.

The Patentee says, that he claims "the method of applying air forced through pipes, to act directly upon water in the manner shown, for the purpose of drawing, raising, or pumping water out of mines, wells, pits, &c.;

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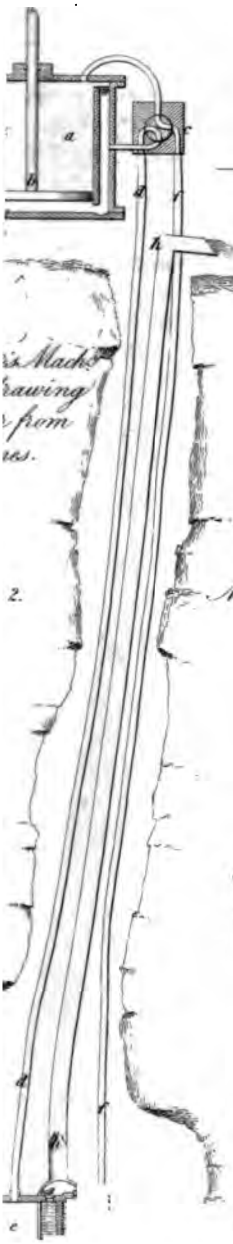


Johnson's Salt Pans.

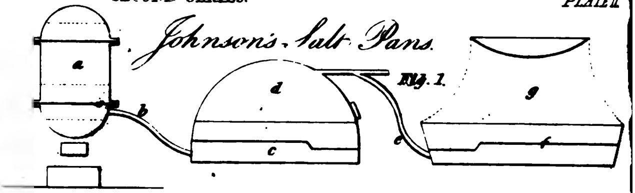


Fig. 1.

Robinson's imp.^d Brushes.

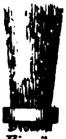


Fig. 3.

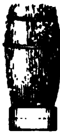


Fig. 4.

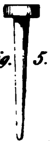


Fig. 5.

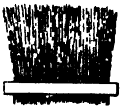


Fig. 6.

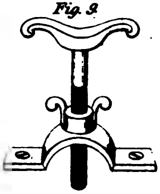


Fig. 9.

De Berenger's powder Flask.

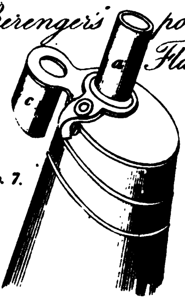


Fig. 7.

Mills imp.^d Fire-arms

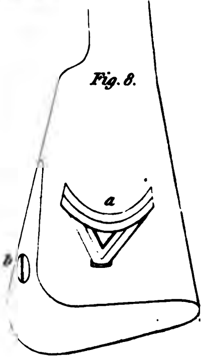


Fig. 8.

Busk's propelling App.^ts

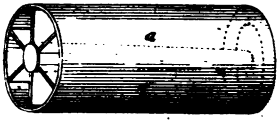


Fig. 12.

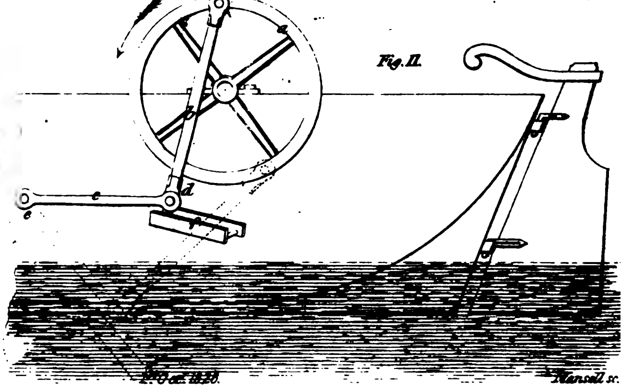


Fig. 11.

1 Oct. 1828. Mansell sc.

and also the mode of applying air so forced through pipes to act upon a piston for raising water, and for giving motion to any machinery for the purpose of drawing, raising, or pumping water out of mines, wells, &c."—[*Inrolled June*, 1827.]

To **CHARLES RANDOM, BARON DE BERENGER,** *of Target Cottage, Kentish Town, in the Parish of St. Pancras and County of Middlesex, for his having discovered and Invented certain Improvements in Gunpowder Flasks, Powder Horns, or other Utensils of different Shapes, such as are used or can be used for the purpose of carrying Gunpowder therein, in order to load therefrom Guns, Pistols, Blunderbusses, and other Fire Arms.*—[Sealed December 20, 1826.]

THESE improvements in powder flasks are contrivances, by which the charge of powder received into the tube at the top of the flask, ready for loading the piece, is sliden round, and brought over a discharge pipe, by which it is passed into the gun, without inverting the flask, as in the usual mode.

Plate II. Fig. 7. represents the top of one of these improved powder flasks, shewn in perspective; *a*, is the tube which receives the charge of powder, and is standing over the aperture in the top of the flask, through which the powder is passed for the charge. When the tube is charged with powder, a small slider at the under part cuts off the communication with the interior, and retains the powder in the tube, as in the ordinary flask.

In conveying the powder from the tube to load the gun, instead of inverting the flask, as is the ordinary way, the lower end of the pipe *c*, is inserted into the muzzle of the gun, when the thumb of the sportsman presses against the tail of the lever *b*, and brings the tube over the pipe *c*, when the powder is immediately discharged from the tube *a*, through the pipe *c*, into the gun barrel; and when this is done, a spring within carries the tube back again to its former situation.

The upper end of the tube *a*, is covered with a disc of leather, which will be blown out without mischief, in case of the powder accidentally exploding as it passes into the barrel; and there is a plug brought up, which closes the aperture into the flask as the tube slides away, in order to cut off the communication.

The Patentee claims to be the inventor of the following particulars; 1st. The sliding tube for holding the charge of gunpowder ready to be introduced into the gun, and the leather cap at the top to prevent danger, from accidental explosion. 2d. The side pipe or funnel, for conducting the charge of powder into the barrel of the gun without inverting the flask. 3d. A plug connected with the sliding-tube, which passes into the aperture in the top plate of the flask, to prevent any explosion of the charges communicating with the interior.—[*Inrolled June*, 1827.]

To WILLIAM MILLS, *of Hazelhouse, in the Parish of Risley, in the County of Gloucester, Gentleman, for his Invention of Improvements in Fire Arms.*—[Sealed October 18, 1826.]

THIS proposed improvement in fire arms, consists of a rest to be attached to the butt part of the stock of a fowling piece, or other guns, against which the right arm may press, in the act of firing, for the purpose of steadying the piece, and taking a more certain aim.

The rest is proposed to be formed as a crutch, the steam of which is passed into a mortice hole in the butt. Plate II. Fig. 8, shews a portion of the gun-stock, with the rest inserted in it; *a*, is the rest, formed with a horned or semicircular top, supported by bracers connected to the stem. When the stem has been passed into the mortice hole, it is made fast by a screw *b*; and in firing, the hollow of the crutch receives the arm of the sportsman near the wrist, which being pressed against it, confines the piece tightly to the shoulder.

The rest may be constructed in several ways, such for instance as exhibited at Fig. 9, where the crutch is screwed into a staple, intended to be fastened to the butt; and other forms of crutch and modes of attaching them, may be devised, all of which come within the intention and claim of the Patentee.—[*Inrolled April*, 1827.]

To William Busk, *of Broad Street, in the City of London, Esq. for his Invention of certain Improvements in propelling Boats and Ships, or other Vessels, or Floating Bodies.* [Sealed October 18, 1826]

There are two plans for propelling suggested under this Patent. The first is a paddle board, which is to be carried through the water, by means of jointed levers, with a sort of crank movement; the resistance of the paddle against the water giving the propelling stroke. The second is a series of radial paddles revolving within a cylindrical case, the rotation of which causes a powerful current of water to be sent out of the cylinder by centrifugal force, and the vessel to be impeded in an opposite direction by the reaction.

Plate II. Fig. 10, represents a portion of a vessel with the propelling apparatus first mentioned, adapted thereto; *a*, the fly wheel of a steam engine, revolving upon a shaft, in the ordinary way; *b*, is a sweep rod attached to the rim of a fly wheel, and to the lever *c*, by a joint *d*; which lever *c*, vibrates upon its fulcrum pivot *e*, fixed in the side of the vessel. Near the joint *d*, the paddle board *f*, is affixed to the end of the sweep rod, and as the fly wheel goes round, the paddle board is passed through the water, in an arc of which the fulcrum pivot is the centre; and in thus passing meets with that resistance against the water which impels the vessel forward.

There is a peculiarity in the construction of the paddle board, the particular object of which is not pointed out in the specification; it consists of a broad flat board, with two narrow pieces attached to its edges.

The paddle is proposed to be worked by the crank movement, above described; but any other mechanical contrivance, which will move it through a suitable arc, may be employed instead.

The second contrivance for propelling vessels is exhibited in Fig. 11; *a*, is a hollow cylinder, to be placed lengthways by the side of the vessel, within which there is an ordinary paddle wheel, with radial float boards. This wheel is made to revolve rapidly upon its axis, by means of an engine within the vessel, and the water being admitted into the cylinder at the contracted opening in the end *b*, will be driven out at the opposite end *c*, by the centrifugal force of the revolving wheel; which force being towards the after part of the vessel, will propel it in the opposite direction.—[*Inrolled April*, 1827.]

To **Anthony Scott**, *of Southwark Pottery, in the County of Durham, Earthenware Manufacturer, for his Invention of an Apparatus for Preventing the Boilers of Steam Engines and other similar Vessels of capacity becomig Foul, and for cleaning such Vessels, when they become Foul.*—[Sealed August 4, 1827.]

The means proposed of preventing the accumulation and adhesion of sedement and foul matter on the bottoms and sides of boilers, is by placing plates, slabs or trays of metal, stone, clay, wood, or any other suitable material, near the bottom of the boilers; upon or into which the sedement from the boiling water will fall; and when it may be requisite to clean out the boiler, it will only be necessary to remove these plates, slabs, or trays, and to scrape out the sedement or incrustation therefrom, without touching the internal surface of the boiler itself.

These plates, slabs, or trays, are not to lay in close contact with the bottom of the boiler, but are to be raised upon feet or ledges, in order that the water may pass freely over the bottom of the boiler, beneath the trays. By this arrangement, it is said that the water above the slabs or trays, will be very little disturbed by the boiling, and that the sedement will consequently descend by its gravity, without impediment.—[*Inrolled September*, 1827.]

To **Joseph Hall** *and* **Thomas Hall**, *his Son, both of Leeds, in the County of York, Braziers and Brass-Founders, for their having found out or discovered an Improvement in the Making and Manufacturing of Metallic Cocks, for Drawing off Liquids.*—[Sealed October 11, 1827.]

The Patentees propose to make metallic cocks of lead, or of a mixture of lead and antimony, instead of brass or other hard metals, such as cocks are usually made of; the advantage of which are stated to be, that the cocks will be less liable to break, or to get out of repair.

A mixture of lead and antimony, or of zinc, in the proportion of one ounce of antimony, or three ounces of zinc, to one pound of lead, is stated to be the best alloy of which these improved cocks can be made.

Nothing peculiar is proposed in the form of the cock, but that such parts of the barrel and the plug as come together, should be bushed with brass, or some such hard metal, in order to preserve the figure, and keep the joints sound and water-tight.—[*Inrolled December*, 1827.]

To Benjamin Somers, *of Langford, in the Parish of Bennington, in the County of Somerset. M. D. for his Invention of certain Improvements on Furnaces for smelting different kinds of Metal Ores and Slaggs.*—[Sealed 28th April, 1827.]

The Patentee proposes to build his smelting furnaces of slaggs of ore, and by placing an intense fire within, to cause those slaggs partially to melt, and form an incrusted surface, which after cooling, will be so hard and close, as to resist the future action of fire.

The description of the manner of constructing the furnace, as given in the specification, does not convey in very clear terms, the Patentee's plan of operation. It seems that in iron pan is to form the bottom of the furnace, and to have holes perforated in it, which are to be tapped for drawing the fluid metal, when the furnace is in action; and slaggs of ore are to be built up round the pan, and closely beaten together. The sides are to be made inclining as usual. When this is done, a strong fire is to be raised within, and urged by blasts as usual, which will partially burn away the slagg; to those fresh slaggs must be added, until the whole of the internal part of the furnace has become compact and firm. [*Inrolled October*, 1827.]

Review of Books.

The Hunterian Oration: Delivered in the Theatre of the Royal College of Surgeons in London, on the Fourteenth Day of February, 1828, *by* SIR WILLIAM BLIZARD, KNT. F.R.S. F.A.S. F.R.S. Ed. &c. &c. *Printed at the request of the College.*

THIS is the third Hunterian Oration delivered by this distinguished individual. They were especially founded by Dr. Baillie and Sir Everard Home, for the advancement of surgical knowledge, and in the hands of Sir Wm. Blizard appear peculiarly adapted for their intended end.

Our author in the opening of the Oration, takes a rapid review of the history of the College, and we cannot resist appropriating to ourselves a paragraph in this division of the work. In the present day, when shameless quackery and bold empiricism is found in almost every branch of science, it becomes peculiarly our duty to protect the "healing art" from their intrusion.

"Men, totally ignorant of that art and science, the practice of which they have the audacity to profess; unrestrained by natural feeling, by moral sentiment, or by a sense of religious obligation; are sporting with the health, happiness, and lives of human beings, without legal controul." This is an eloquent and true picture of a large portion of the best paid individuals in the medical profession.

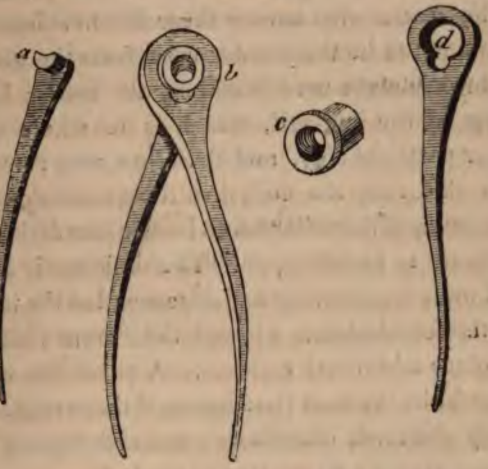
The Museum attached to the College is less known than it merits, and we are glad to see by a reference to the present Work, that more than three thousand persons benefited by an examination of its contents, during the last year. "Princes and Sovereigns," observes Sir William Blizard, "who have visited the Museum, must thence have been inspired with correct ideas of animal structure and economy; of the utility and genuine dignity of the healing art; of the just pretensions of its honourable professors to national respect and gratitude; and consequently with the desire of promoting objects of the highest importance to the people under their guidance and protection; by inclining them to meditate on the works of Creation, and by directing men of philosophical research to the certain paths of science."

It is gratifying to hear the great living parent of surgery employing language such as this. Materialism is not an essential part of physiology. We thank God, that the smart resulting from a cut finger has always been more than repaid by the opportunity that it afforded of briefly examining the wonderful mechanism of the part affected. The mind must, indeed, be strangely constituted, that could suck poison from so sweet a flower.

Novel Inventions.

Lighting Mines with Gas.

Mr. Pinkus, of Philadelphia, has been engaged for some time, in maturing a method of Lighting Mines with Gas; and hopes by his improved plans to prevent the possibility of explosion, from the presence of what is called fire damp in foul mines. He has an improved safety-lamp, adapted to this species of light, in which he supports combustion, by means wholly independent of the atmosphere of the mine; it affords a brilliant light, whose rays are unobstructed by wire gauze. Mr. Pinkus has promised to furnish us with drawings of the lamp, and a detail of the *modus operandi*, which we shall have pleasure in laying before our readers at an early period.



Screw Wrench for Circular Bolts.

THE apparatus represented in the above wood-cut has long been a desideratum with the practical artizan. It was invented by Mr. Jones, in whose patent wheel manufactory it is extensively and usefully employed. We have already described the Patent iron wheel with which the wrench really originated, and regret that our space will not at present permit an extended notice of the numerous curious lathes and drilling machines contrived by Mr. Jones, as the simplicity of this apparatus is not among the least of its recommendations. The lever of the wrench *d*, is furnished with a circular opening, and another and smaller aperture *c*, shewn beneath.

The clamping lever *a*, is inserted at the small semi-cirat once. By the new machine as many blades may be worked at the same time, as there are slabs required from any block of marble. Here the saving of labour is immense, and the saving of time no less advantageous. This machine also appears to us to perform the labour more safely and accurately.

The next machines were one for Sanding and Grounding slabs of stone, and another for polishing them. The former, of which we could only convey an accurate conception of by means of drawings, appears to us must also supersede hand labour; and demonstrably produce a more perfectly even surface than is at present attained by the old mode. We speak from an examination of a great variety of specimens, when we state that the machine for polishing does produce a far higher, and more durable polish on almost every description of marble, than is usually communicated by hand labour.

There are two other machines, each attended with similar advantages of expedition, accuracy, superior workmanship, and cheapness for cutting up the material into smaller dimensions, and working and polishing mouldings, &c. The machinery is at present applicable only to plane surfaces, circles, and regular figures. For irregular forms and ornaments, such as Corinthian capitals, the hands of the sculptor or the mason is still required, but the most common processes are all greatly improved, and must be reduced in expense by the new machinery. We saw specimens of the complete work, in magnificent chimney pieces, fluted and plain columns, tessilated pavements, circular and sunk work for tables, slabs and mouldings of various descriptions, slabs from a quarter of an inch upwards, and linings for rooms, in all varieties of marble.

The grand effect of polished marble walls has been presented to the fashionable world, on the staircase of Crockford's. The walls of the chief public buildings, and the most considerable private mansions, found at Pompeii and Herculaneum, were cased with slabs of polished marble; and antiquarians are aware that the cities of the Romans derived their chief splendour from the profuse use of this material. When improved conveyance shall give us advantages, similar to those possessed by that people in the vicinity of the Italian marble quarries; when the mighty power of steam comes into full operation, and affords us, as it will, greater advantages than they possessed in their boundless command of slave labour, the frail fabrics of our modern architectural deformities must give way to edifices that will equal the finest monuments of antiquity in durability, and exceed them in elegance and splendour.

Lithochromy, or the Art of multiplying Oil Coloured Paintings, by Lithography.

THE art of Lithography, in which designs are executed with one tint, has been carried to great perfection in Germany. M. Boisserée has long ago succeeded, by the successive application of several plates, to give to lithographic drawings, executed under his direction by M. Strixner, all the effect of a design coloured with several tints. More recently, however, M. Malapeau has attempted to obtain oil pictures by means of the mechanical process used in lithopraghy. After painting on the stone the general designs, no fewer than twenty-seven rollers are then in succession passed over the stone, in order to communicate to it all the colours which enter into the picture. An impression is then taken in the usual manner, and of course this impression will be a picture coloured with the twenty-seven tints which have been employed. This art is most perfect when the painting is on a large scale. M. Malapeau has executed a Christ larger than life, the effect of which is said to be surprising.—*Revue Encyclopedique.*

Theory of Sir H. Davy's Safety Lamp. By G. Libri.

An interesting paper on the nature and properties of flame, was lately read by G. Libri, at the Society of Georgofili (Florence). The author was led to doubt the correctness of the theory or explanation given by Sir H. Davy, in order to account for the phenomenon of his safety lamp. The distinguished inventor ascribes the security which the lamp affords to the conducting power of the metallic gauze, by which it is supposed the temperature of the flame is so much lowered as to be insufficient to ignite the inflammable mixture on the outside. Some facts known to the author were at variance with this hypothesis; and he found upon trial, that when single rods were made to approach a flame, the latter was always inflected on all sides from the rod, as if repelled by it, and that this effect was independent of the conducting power of the rod, whether good or bad. The amount of inflection or repulsion was directly as the mass, and inversely as the distance from the flame. It was not diminished by increasing the temperature of the rod, even to such a degree as to render it scarcely possible for it to abstract any of the caloric. In fact, when two flames are made to approach each other, there is a mutual repulsion, although their proximity increases the temperature of each instead of diminishing it.

"From these principles," says the author, "the theory of the safety lamp is easily deduced. A metallic wire, exerting, according to its diameter and its own nature, a constant repulsion upon flame, it is evident that two parallel wires, so near each other as not to exceed the distance of twice the radius of the sphere of repulsion, will not permit a flame to insinuate itself between them, unless it be impelled by a force superior to the intensity of repulsion. If to these two wires others be added, a tissue is formed impenetrable to flame, especially when the conducting power of the wires adds its influence to that of the repulsion."

The author conceives, that, from the views above stated, the number of cross or horizontal wires in the Davy lamp is unnecessarily great, and that by rejecting all of these excepting a number sufficient to secure the firmness of the tissue, the lamp would afford as great a security as at present, and at the same time diffuse a much greater light. This opinion he has verified by actual experiment.—*Bibliotheque Universelle de Geneve.*

On the use of Steatite or Soapstone for diminishing Friction in Machinery. By Mr. E. Bailey, Boston.

This mineral has been long in use at the extensive manufactories at Lowell, in North America. For this purpose it is thoroughly pulverised, and then mixed with oil, tallow, or tar, whichever may be the best adapted to the use for which it is designed. It is of course important to procure that which is free from *grit*; and it can be purified in a good degree by mixing the powder with oil, and diluting it after it has stood a few minutes. The heavier particles will form a sediment to be rejected. It is used on all kinds of machinery where it is necessary to apply any unctuous substance to diminish friction; and it is said to be an excellent substitute for the usual compositions applied to carriage-wheels.

Some idea of the value of soapstone, in this use of it, may be formed from the following fact, communicated by D. Moody, Esq. the superintendant of the tar-works on the Mill-dam, near Boston:—Connected with the rolling-machine of that establishment, there is a horizontal balance wheel weighing *fourteen tons*, which runs on a step of five inches diameter, and makes from seventy-five to a hundred and twenty-five revolutions in a minute. About a hundred tons of iron are rolled in this machine in a month; yet the wheel has sometimes been used from three to five weeks without inconvenience, before the soapstone has been renewed. The superintendant thinks, however, that it ought to be more frequently applied.

This use of soapstone was discovered at Lowell by an accident, the circumstances of which it is not necessary now to repeat. It is sufficient to say, that it is regarded by those who have used it, as an invaluable discovery. I have been assured that it has never been known to fail of producing the desired result, when applied to machinery which has begun to be heated, even in those cases where nothing else could be found which would answer the purpose.—*Silliman's Journal of Science.*

Improvement of Candles. By JOHN MURRAY, F. L. S. and Lecturer on Chemistry. *From Brewster's Journal.*

I STEEP the cotton wick in lime water, in which I have dissolved a considerable quantity of *nitrate of potassa*, (*chlorate of potassa* answers still better, but is too expensive for common practice,) by this means I secure a purer flame, and superior light;—a more perfect combustion is insured,—snuffing is rendered nearly as superfluous as in wax candles, and the candles thus treated do not "*run.*" The wicks must be thoroughly dry before the tallow is put to them.

A Pyrometer for measuring high Temperatures.

By JAMES PRINSEP, ESQ. Benares.

AFTER trying various plans for pyrometers, Mr. Prinsep gave the preference to one founded on the following principles:—

1. That the fusing points of the pure metals are fixed and determinate.
2. That those of silver, gold, and platinum, comprehend a very extensive range of temperature ; and
3. That between these three fixed points in the scale as many intermediate ones as may be required will be obtained, by alloying the three metals together in different proportions. When such a series of alloys has been once prepared, the heat of any furnace may be expressed by the alloy of least fusibility which it is capable of melting. The determinations afforded by a pyrometer of this kind will, independently of their precision, have the advantage of being identifiable at all times and in all countries. The smallness of the apparatus is an additional recommendation, nothing more being necessary than a little cupel, containing in separate cells the requisite number of pyrometic alloys, each of the size of a pin's head. The specimens melted in one experiment, need only to be flattened under the hammer, in order to be again ready for use. For the purpose of concisely registering the results, the author employs a simple decimal method of notation, which at once expresses the nature of the alloy, and its correspondence with the scale of temperature. As the distance between the points of fusion of silver and gold is not con-

siderable, the author divides the distance on the scale into ten degrees; obtaining measures of each by a successive addition of ten per cent. of gold to the silver, the fusion of which, when pure, marks the point of zero, while that of gold is reckoned at ten degrees. From the point of fusion of pure platina to that of pure gold, the author assumes 100 degrees, adding to the alloy which is to measure each in succession one per cent. of platina. The author then enters into a detailed account of the method he employed for insuring accuracy in the formation of the requisite series of alloys, and of various experiments undertaken to ascertain their fitness as measures of high temperatures. The remainder of the paper contains the recital of the author's attempts to determine, by means of an apparatus connected with an air thermometer, the relation which the fusing point of pure silver bears to the ordinary thermometric scale. A full account of these proceedings, which was read before the Royal Society of London, will probably appear in the next volume of their *Transactions.*

Method of making Ultramarine, discovered by M. TUNEL.

THIS most important discovery, which will give the greatest satisfaction to painters, and all the lovers of the fine arts, was announced to the Academy of Sciences in February last. The fortunate discovery of this process, which will very properly be kept secret for some time, was made by M. Tunel, inspector of gunpowder and saltpetre. It was by following the analysis of M. Clement Desormes that he succeeded in the direct formation of it, and what he obtains is actually finer and more brilliant than the natural colour. M. Tunel has already been able to supply the public with ultramarine at one guinea per ounce, the colour having been sold from two guineas to two pounds ten shillings per ounce. He expects, however, to be able to sell it at a more moderate price.—*Le Globe.*

A Beautiful Blue Colour. By M. BRACONNOT.

A PORTION of a very fine blue pigment was placed in the hands of Mr. Braconnot, by Mr. Noel, for examination. It was the produce of a manufacture at Schweinfurt, where the preparation was kept secret. M. Braconnot readily ascertained it to be a triple compound of arsenious acid, hydrated deutoxide of copper, and acetid acid; so that it approximates to the green of Scheele. After various trials to form it, the following process was found to be the best. SIX parts of sulphate of copper were dissolved in a small quantity of water; also, six parts of white arsenic, with eight parts of potash of commerce, were boiled in water, until no further quantity of carbonic acid was disengaged. This hot solution was gradually mixed with the first, continually agitating until effervescence ceased; an abundant dull yellowish green precipitate was formed. About three parts of acetic acid were then added, or such a quantity, that a slight excess was sensible to the smell; gradually the precipitate diminished in volume, and in some hours, a slightly crystalline powder was deposited at the bottom of an entirely colourless solution. The fluid was poured off as soon as possible; and the powder, washed with plenty of boiling water to remove the last portions of arsenic, was then of a brilliant colour.

Care must be taken not to add to the cupreous solution an excess of arseniate of potash, as it causes waste of the acetic acid afterwards added, as the latter must be in excess. In repeating the process in the large way, an arseniate of potash, prepared with eight parts of oxide of arsenic, instead of six, was used, and the result was very successful. M. Braconnot thinks that probably a slight variation of the proportions he has given may be found advantageous; but in the mean time considers it right to give the best process he is able for the preparation of a colour so beautiful, and which may be very valuable in the arts.—*Ann de Chim.*

On recovering Gold or Silver from old Gilt or Silvered Wood, &c.

UNTIL very lately, the small quantities of gold, or silver, that could be procured from the surfaces of wood, &c. which had been gilt or silvered, was not thought worth the trouble of taking off; and this wood was burnt the same as any other fire-wood, without even searching in the ashes for the gold, or silver, they contained. Persons, who were aware of its value, bought this sort of wood at a very cheap rate, and burnt it by itself, on their hearths; and afterwards, with great trouble, collected from among the ashes, all the gold, &c. they contained, by the process of amalgamation. This was difficult and troublesome, on account of the vast quantity of ashes produced by the wood; and in consequence of the thick coating of carbonate of lime, with which it had been covered, this process was by no means economical.

The following simple means may be employed with profit:—First, steep the wood in boiling water, and for this purpose a trough must be made, capable of receiving the longest pieces, and sufficiently wide to contain a number of them; then pour on the wood a quantity of boiling water sufficient to cover it, and cover the trough with a lid, which closes it as perfectly as possible, in order to retain the steam of the boiling water, as well as to keep it hot for a long time. The operation is, however, performed better, and in less time, by means of the steam of boiling water, which may be introduced into the close vessel containing the gilded wood, and to which a safety-valve is applied; or, perhaps still better, by putting it into a boiler of the form of the trough we have described, and setting it upon the fire. The boiling water, or steam, dissolves the glue or size which secured the leaf gold; which on being detached falls into the water. In order to accelerate the separation of the leaves of gold, they take out the pieces of gilt wood, after they have been steeping for some time in the boiling water; they then put them into another vessel, containing a little hot water, and, with a brush wetted in this water, they brush over the gold, which easily separates and remains in the water, into which they are also careful frequently to dip the brush. The coat of size and whiting remains almost entire on the wood; and a part of the gold size only is removed with the gold, and is found mixed with it in the water.

They allow the water to remain at rest; and when the whole is precipitated, they decant the water, and evaporate the deposit to dryness. They then remove the matter found at the bottom of the vessel, powder it in a mortar, and expose it to the action of fire under a muffle, in order to burn all the glue and the greasy or oily substances which formed a part of the coating. The gold is then separated from it by amalgamation.

This process is also applicable to old gilt plaster, and whether it be taken off the wall, or remain upon it. In the latter case, the gilded part must be washed with hot water and a sponge, and be thorougly cleaned off with a hard brush, frequently dipped in the hot water. But we must by no means neglect to collect together the mortar, &c. which falls off from the walls so treated, as it generally contains a great quantity of gold, which it is important to unite in the *washings*. By this means, we have known to be recovered more than 800 franks' worth of gold, from an old chapel which was repaired.

The same process, which is made use of to recover the gold from gilded wood or plaster, is also equally applicable to the removing of any silvering which had been laid on with silver leaves. This, although less lucrative than that of recovering gold, must nevertheless not be neglected, as it produces very good results, when it is performed with dexterity and economy.

The gold and silver, also, from gold and silver lace, spun upon silk, when it becomes old, may be burnt for the purpose of collecting the gold and silver. For this purpose it is made up into packets like balls, wrapped round with iron wire, and made red-hot in a furnace; by this means the silk is reduced to ashes. When the packet is cold, they beat it in a mortar or kind of tray: the ashes all become powder, which they place upon a pasteboard, and fan or blow it gently, when the metallic parts, being the heaviest, remain, and the ashes are carried away by the wind. We must not, however, conceal the fact, that by this means, a little gold or silver will be lost, unless the ashes blown off be washed over afterwards.

There is, however, an easy means of preserving the whole of the valuable parts, if the operation is carefully performed. The lace or stuff must be cut into very small pieces, and be boiled for some time in soap-boilers' caustic lees (pot-ash, or caustic soda): these substances dissolve the silk, and the gold or silver remain pure in the liquor. The alkali must be washed off, and the deposit be afterwards *parted*, in order to separate the gold and silver.

[*Dictionnaire Technologique.*]

Polytechnic and Scientific Intelligence.

La Perouse.

In the last number of the *Revue Encyclopedique* there is a paper on the expeditions which, at various times, have been sent in search of the unfortunate Perouse, at the close of which it is asserted that, although probable, it is by no means certain, that the vessels known to have been wrecked on a reef off the Manicolo Island, were the Boussole and her comrade. Could the writer of that paper have seen the *Literary Gazette* of the 12th of April last, in which is a letter from Mr. John Russel, an officer on board the Research (a vessel despatched by the Indian government for the purpose of making every possible inquiry on the subject), to his uncle, Sir W. Betham, describing the various articles which had been found on the island, and especially a part of a plated candlestick, on which was engraved a shield with arms, of which arms was inserted an accurate engraving, and shewed that they were the arms of the family of Colignon, the name of the botanist on board the Boussole? This fact as was observed at the time, afforded conclusive evidence that the vessels whose wrecks have thus been traced could be no other than M. de la Perouse's ships. How is it that so incontrovertible a proof escaped the attention of the writer in the *Reveu Enciclopedique,* whose main object, indeed, seems to have been the introduction of an ode on the subject?

Academie Royale des Sciences.

An analysis has been published by the two secretaries of the Academie Royale des Sciences, at Paris, of the labours of the Academy during the year 1827. They appear to have been numerous and valuable. Besides a variety of communications from scientific correspondents, both in France and elsewhere, many important contributions have been made by members of the academy. Among others, posthumous papers by M. Laplace, exhibiting new means of working the long calculations of the distances of the planets; experiments by M. Biot on the pendulum, shewing that it is susceptible of great variations, and therefore that it is not a good standard of measure; inquiries by M. Fourrier into the temperature of the spaces in which the planets move; meteorological observations by M. Bouvard; experiments on the refraction of a rare mineral in the Tyrol, by M. Biot; four memoirs on the laws of sound, by M. Savart; a paper by M. Girard, on roads, railways, and canals, in which the preference is given to the last; calculations respecting the known comets of our system, by M. Damoiseau; hydrographic works by Rear Admiral de Rossel, M. Beautempts-Beaupré, and others; numerous and interesting communications from the Baron Dupin; &c. &c.

Effect of Mountains on the Atmosphere.

MOUNTAINS precipitate the moisture contained in the air, not so much by attracting it to their summits, as in consequence of their rocky and grassy sides, when acted on by the sun, heating large masses of air in the cold upper regions of the atmosphere, which, streaming upwards, come in contact with cold currents, moving laterally, or otherwise generate circumstances that will cause precipitation. A small increase of elevation compensates in adding to the quantity of rain for a great distance from the sea. At

Geneva, the annual fall of rain is 40 inches; while at Paris, (300 miles nearer the sea) it is only 19½ inches. In England, it is found that Keswick and Kendal, situated among the mountains, have 67 or 69 inches of rain annually, while places in the level country, and on the sea coast, have only 24 inches. But, although more rain falls in mountainous than in level countries, the depth is greater at the bottom than at the top of a mountain, and close to the surface of the ground than at a distance from it.

Vibration of Glass Vessels indicative of approaching Storms.

PROFESSOR SCOTT, of Sandhurst College, observed in Shetland, that drinking glasses placed in an inverted position upon a shelf in a cupboard, on the ground floor of Belmont house, occasionally emitted sounds as if they were tapped with a knife, or raised up a little and then let fall on the shelf. These sounds preceded wind, and when they occurred, boats and vessels were immediately secured. The strength of the sound is said to be proportional to the tempest that follows.

Meteoric Stone which fell in India on the 27th Feb. 1827.

THIS aerolite fell in the district of Azim Gerh, nearly five miles from a village called Mhow. It fell about three o'clock, in a perfectly clear and serene sky, and was accompanied with noises like the roaring of cannons. Four or five fragments were picked up four or five miles asunder; one broke a tree, and another wounded a man severely in the arm. The largest piece weighed three pounds. It is perfectly similar to that which fell near Allahabad in 1802, and near Mooradabad in 1808. The specific gravity was 3.5. The presence of chrome and nickel were ascertained.

American Patents,

FOR INVENTIONS AND IMPROVEMENTS.

(Continued from Vol I. page 372.)

Improvement in plane stocks, of cast-iron; Hazard Knowles, of Colchester, New London County, Conn., August 24.

In the composition of liquor, to start the yolk, animal oil, or grease, which wool contains, when taken from the sheep; John Goulding, of Dedham, Massachusetts, August 24.

In the mode of manufacturing wool, or other fibrous material, in which sliver, slubbing, or roping, is unwound, or delivered, on a mule spinning machine, or drawing frame; John Goulding, of Dedham, Massachusetts, August 24.

In the mode of scouring and washing all kinds of cloths; John Goulding, of Dedham, Massachusetts, August 24.

In the mode of throwing the shuttle, or shuttles, in weaving; John Goulding, of Dedham, Massachusetts, August 24.

In the washing machine, called the accelerated washer; Moses Cass, of Caroline, Tompkins County, New York, August 29.

In making aqueducts for conveying water or gas under ground, by means of a conductor, formed of water-proof lime, as a cement for stone, wood, or brick; John M. Benham, of Bridgewater, Oneida County, New York, August 29.

In the loom, for weaving all kinds of figured goods; Horace Baker, North Salem, West Chester County, New York, Aug. 30.

In the art of distilling, by Aikin's improved rectifiers; John M. Aikin, Philadelphia, August 30.

In the use, combination, and construction of boats; Thomas Thorpe, City of Washington, District of Columbia, August 31.

In the saw, called the two-edged saw; Moses Cass and Aaron Bull, of Caroline, Tompkins County, New York, August 31.

In the machine for paying or filling the seams of ships and other vessels, called a pitch syringe; Daniel Flint, of Nobleboro, Lincoln County, Maine, August 31.

In the magazine percussion gun-lock; James B. Lowry, of Mayville, Chatauga County, New York, Sept. 8.

In the machine for separating the hair, and other extraneous matter, from fur of various descriptions, to prepare it for hatters' use; John Macdonald, of the city of New York, Sept. 11.

In the open single screw, or spiral water-wheel, called the open screw water-wheel, Elijah Skinner, of Sandwich, Stratford County, New Hampshire, Sept. 11.

In the cast-iron mill, for grinding bark; William Torrey, of rook, Cumberland County, State of Maine, Sept. 13.

In the churn; Daniel Sheldon, of Pultney, Steuben County, New York, Sept. 13.

In the machine called the propelling water paddle wheel; John James Giraud, of Baltimore, Md., Sept. 18.

In the mode of tanning leather; Osmond Cogswell, of Cincinnati, Ohio, Sept. 18.

In the hoe, called the prong hoe; Joseph Wilson, of Marlborough, New Hampshire, Sept. 20.

In Paul Hawe's machine, for making shingles; George A. Hoard, of Antwerp, Jefferson's County, New York, Sept. 20.

In the fanning mill; Enoch Walker, of Springville, Four Corners, Susquehanna County, Pennsylvania, Sept. 20.

In the machine for cutting shingles; George W. Dana, of Lowville, Lewis County, New York, Sept. 20.

In a vegetable composition, or matter, for preventing or curing the scurvy, and making catchup or catsup, and various sauces; James U. Armour, of Fredericktown, Frederick County, Md., Sept. 28.

In Israel Johnson's, jun., patent saw mill; Anson B. Graham, of Lee, Berkshire County, Massachusetts, Sept. 28.

In the washing machine; Franklin Kellsey, of Middletown, Conn., Sept. 28.

In the apparatus for setting saw seeth, called a spring saw set; John Boggs, of Philadelphia, October 4.

In the printing press; Samuel Couillard, of Boston, Oct. 5.

In the machine called a power gained lever; Edward G. Fitch, of Blakely, Baldwin County, Alabama, October 5.

In the thrashing machine; Ebenezer B. Pike, of Lichfield, Maine, October 5.

In the mode of making pressed glass knobs, for furniture, &c. at one operation; John Robinson, of Pittsburg, Pennsylvania, October 6.

In the construction of a flexible rack, and manner of application for operating on ships' carriages, or other carriages, used in the marine or other rail-ways; Jesse Wood and Paul A. Sabbator, of New York, October 6.

In hydraulics; Jacob Roup, of Kenhava County, Virginia, October 6.

In the cast-iron sled shoe, and cutter shoe; Edward Trask, Sangerfield, Oneida County, New York, October 6.

In Dearborn's patent warehouse balance, so called, for weighing all kinds of substances, whether gross and ponderous, or light and delicate, called Blaisdel's improved avoirdupois balance; Samuel Blaisdell, of Lancaster, Fairfield County, Ohio, October 10.

In the machine for mortising and tenoning timber; John M'Clintic, of Chambersburg, Pennsylvania, October 8.

In the machine for making plastering laths; Thomas Wright and Abraham P. Howell, of Cincinnati, Ohio, October 9.

In the machine called the screw cradle, for raising ships or vessels, of any size or weight, entirely out of water, in order to repair, or for any use required; Charles Miner, of Lyme, Conn., October 12.

In the lever percussion gun lock; John Ambler, junr. of South New Berlin, Chenango County, New York, October 16.

In the construction and use of moulds with a core, for pressing glass into various useful forms, called Dummer's scallop, or coverplate; Phineas C. Dummer, of Jersey city, New Jersey, October 16.

In forming glass by the combination of moulds with mechanical powers; George Dummer, Phineas C. Dummer, and James Maxwell, of Jersey city, New Jersey, October 16.

In the vertical bucket or float wheel, for propelling boats; Stacy Costill, of Philidelphia, October 17.

In a bobbin tube for spinning cotton; Benjamin Huchinson, of Philidelphia, October 18.

In propelling machinery by weights; Cain Broyles, of Tellico, Munro County, Tennesse, October 19.

In the trip-hammer, propelled by the foot; Ebenezer Pierce, and Joseph Hathaway, of Pultney, Steuben County, New York, October 19.

In the mode of casting types, called the mechanical type caster; Stephen Sturdevant, and Edwin Starr, of Boston, October 23.

In the water-proof stiffening for hats, called "Hempstead's improved stiffening to water-proof and stiffen hats," his former patent for the same invention, dated the 25th day of May, 1827, being cancelled on account of a defective specification, May 25th, 1827, re-issued; Stephen Hempstead, junr. of St. Charles County, Missouri, October 26.

In the machine for cutting works; George Rawlins, of Philadelphia, Oct. 30.

In the application of the scape heat from the furnace, and the discharged steam from the engine of the ordinary high pressure steam engine, to the manufacturing of course salt, from salt water; Alexander Brown, of Salina, New York, Oct. 30.

In making steel cylinders or mills, as they are commonly called, for the purpose of impressing figures or devices on copper rollers for calico printing, *by biting in the figures or devices on the steel cylinders, by means of acid*, the process which is usually called etching; David H. Mason, and Mat-W. Baldwin, of Philadelphia, October 30.

In distilling; William J. Cocke, of Surrey County, Virginia, October 30.

In the planing machine; Josias Reihm, of Savage Factory, Maryland, November 1.

In the construction of clocks; Harrison G. Dyar, of New York, November 6.

In cast-iron, or other metal hubs, for wheels of carriages; Benjamin Lyman, of Manchester, Conn. November 6.

In the method of cleaning and polishing rice, coffee, and other grain; Elijah Wilder, of Jersey city, New Jersey, November 6.

In the mode of making or manufacturing machines, for cutting fur from skins, for hatters' use, called the cant twist blades for cutter; Charles C. K. Beach, of Portland, Cumberland County, Maine, November 10.

In the percussion gun-lock, with a magazine; Joseph Shattuck, of Jefferson County, Ohio, November 10.

In making moccasins water proof; John Syms, of New York, November 10.

In the mode of letting water on water wheels; Michael Hildebrand, of M'Minn County, Tennessee, November 10.

In the retention or discharge of fluids, more particularly water; Bradford Seymour, of Westmorland, Oneida County, New York, November 10.

In the musical instrument called the Kent Bugle, which he denominates the harmonic pocket bugle; Richard Willis, of West Point, Orange County, New York, November 10.

In the machine for making shingles; Oliver Wheeler, Monroe County, New York, November 10.

In the mode of imitating all kinds of marble, for the fronts of houses, and perfecting and embellishing hard finished walls; Benjamin Trembley, of New York, November 13.

List of Patents

GRANTED IN SCOTLAND SINCE JUNE 20, 1828.

For certain improvements on anchors. To William Rodger, county of Middlesex.

For an improvement in boiling or evaporating solutions of sugar and other liquids. To John Davis, County of Middlelex.

For certain combinations of machinery for generating and communicating power and motion applicable to the propelling fixed machinery, as also floating bodies, carriages, and other locomotive machines and instruments. To Thomas Stanhope Holland, city of London.

For certain improvements in the method or apparatus for generating Carburetted Hydrogen Gas, and in purifying the same. To Henry Pinkus, Parish of St. James's, Westminster.

For an improvement or improvements in machines adapted for spinning, doubling, twisting, roving, or preparing cotton and other fibrous substances. To Maurice de Jongh, county of Lancaster.

New Patents Sealed in 1828.

To George Stratton, of Frederick Place, Hampstead Road, in the County of Middlesex, Gentleman, for his inventing an Improvement in warming and ventilating churches, hothouses, and all other buildings, which improvements may be applied to other purposes.—28th August, 6 months.

To Granville Sharp Pattison, of Old Burlington Street, in the City of Westminster, and County of Middlesex, Esq. in consequence of a Communication from a Foreigner residing abroad, of a new and improved method of applying iron in the sheathing of ships and other vessels, and of applying iron bolts, spikes, nails, pintals, braces and other fastenings, used in the construction of ships and other vessels.—4th September, 6 months.

To John Seaward and Samuel Seaward, of the Canal Iron Works, in the Parish of All Saints, Poplar, in the County of Middlesex, Engineers, for their having invented a new and improved method or methods for propelling or moving carriages and all other vehicles on roads, and also ships, boats and other vessels on water.—4th September, 6 months.

To Charles Sanderson, of Park Gate Iron Works, near Rotherham, in the County of York, Iron Master, for his having invented a new method of making shear steel.—4th September, 2 months.

To Samuel Brooking, Esq. of Plymouth, in the County of Devon, a Rear Admiral in the Royal Navy, for his Invention of a new method or mode of making sails of ships and other vessels.—4th September, 6 months.

To John Robertson, of Limehouse Hole, in the Parish of All Saints, Poplar, in the County of Middlesex, Rope Manufacturer, for his Invention of certain improvements in the manufacture of hempen rope or cordage.—4th September, 6 months.

To William Bell, of Lucas Street, Commercial Road, in the County of Middlesex, Gentleman, for his having invented improved methods for filtrating water and various other liquors.—4th September, 6 months.

To William Farish, of Cambridge, Jacksonian Professor in the University, for his having invented an improved method or methods of clearing out watercourses.—4th September, 6 months.

To Thomas Robinson Williams, of Norfolk Street, Strand, in the County of Middlesex, for his having invented or found out certain improvements in the making of hats, bonnets and caps, and in the covering of them with silk and other materials, with the assistance of machinery.—11th September, 6 months.

To Thomas Milikew, of Berwick Street, St. James's, in the County of Middlesex, Cabinet Maker, for his having invented or found out an improvement in the construction, making or manufacturing of chairs, sofas, lounges, beds, and all other articles of furniture, for similar purposes, and also of travelling and other carriages and vehicles of every description, for personal use.—11th Sept. 2 months.

To James Beaumont Neilson, of Glasgow, in the

County of Lanark, in North Britain, Engineer, for his having invented and found out an invention for the improved application of air to produce heat in fire forges and furnaces, where bellows or other blowing apparatu are required.—11th September, six months.

To Lemuel Wellman Wright, of Mansfield Street, Borough Road, in the County of Surry, Engineer, for his having invented certain improvements in machinery for making screws.—18th September, 6 months.

To William Losh, of Benton House, in the County of Northampton, Esq. for his invention of certain improvements in the formations of iron rails for rail roads, and of the chains or pedestals, in or upon which the rails may be placed or fixed.—18th September, 2 months.

To Joseph Rhodes, the younger, of Alverthorpe, in the Parish of Wakefield, Worsted Spinner, for his having invented certain improvements in machinery for spinning and twisting worsted yarn, and other fibrous substances. 18th September, 6 months.

To Joseph Clisild Daniell, of Limpley, in the Parish of Bradford, in the County of Wilts, Clothier, for his having invented improvements in the machinery used for dressing woollen cloth.—18th September, 6 months.

To John Melville, of Upper Harley Street, Cavendish Square, in the County of Middlesex, Esq. for his having invented certain improvements in propelling vessels.—18th September, 6 months.

To Edward Forbes Ocson, of Finsbury Square, in the County of Middlesex, Gentleman, for his having invented an improved cartridge for sporting purposes.—18th Sept. 6 months.

To John Jones, of Leeds, in the County of York, Brush Maker, for certain improvements in machinery, or apparatus for pressing and finishing wollen cloth.—25th Sept. 6 months.

Meteorological Journal.

DATE.	HOUR.	BAROM.	Thermometer.	
			IN.	OUT.
Aug. 29	9	30·20	67	68·2
	3	30·20	70	74·2
30	9	30·25	66	68·0
	3	30·10	69	75·4
31	9	30·15	64	64·5
	3	30·00	63	67·0
Sep. 1	9	30·10	63	63·7
	3	30·15	64	70·0
2	9	30·20	59	62·5
	3	30·00	62	66·0
3	9	30·15	60	59·5
	3	30·10	64	65·5
4	9	30·10	60	63·0
	3	30·16	64	66·3
5	9	30·15	61	62·5
	3	30·12	61	63·4
6	9	29·90	68	67·5
	3	29·85	69	74·2
7	9	29·75	68	67·3
	3	29·75	70	73·0
8	9	29·70	66	67·0
	3	29·70	66	67·1
9	9	29·60	65	66·2
10	9	29·60	64	65·2
	3	29·65	66	69·0
11	9	29·72	66	68·3
	3	29·80	65	69·2
12	9	29·75	63	64·2
	3	30·10	62	64·8
13	9	30·20	61	53·2
	3	30·25	60	58·0
14	9	30·30	56	51·6
	3	30·32	51	58·0
15	9	30.42	54	55·0
	3	30·45	56	59·2
16	9	30·45	59	59·8

CELESTIAL PHENOMENA, FOR OCTOBER 1828.

D.	H.	M.	S.	
1	0	0	0	Clock before the ⊙ 10' 25"
3	3	0	0	☾ in conj. with 1α in Cancer
3	5	0	0	☾ in conj. with 2 α in Cancer
4	5	0	0	☾ in conj. with • in Leo.
4	12	0	0	☾ in conj. with ϖ in Leo.
5	0	0	0	Clock before the ⊙ 11' 38"
5	0	0	0	♅ Stationary.
6	15	0	0	☾ in conj. with υ in Leo.
7	1	0	0	♀ in conj. with α in Leo.
8	0	0	0	⊙ eclipsed invisible.
8	12	18	0	Ecliptic conj. or ● new moon
9	23	0	0	☽ in conj. with λ in Virgo.
10	0	0	0	Clock before the ⊙ 13'
11	9	0	0	☽ in conj. with 4 ζ in Libra
11	18	0	0	☽ in conj. with ϑ in Libra.
12	10	0	0	☽ in conj. with φ in Oph.
13	5	0	0	♀ in conj. with ζ in Leo.
15	0	0	0	Clock before the ⊙ 14' 11"
15	18	47	0	☽ in □ first quarter.
16	10	0	0	☽ in conj. with β in Capri.
18	11	0	0	☽ in conj. with ϑ in Aquarius
20	0	0	0	Clock before the ⊙ 15' 8"
21	12	0	0	☽ in conj. with ε in Pisces.
21	17	0	0	☽ in conj. with ζ in Pisces.
22	6	0	0	☽ in conj. with ο in Pisces.
22	13	12	0	Ecliptic opposition, or ○ Full Moon.
22	22	32	0	⊙ Enters Scorpio.
25	2	0	0	♀ in conj. with υ in Leo.
25	3	0	0	☾ in conj. with 1 θ in Taurus.
25	3	0	0	☾ in conj. with 2 θ in Taurus
25	0	0	0	Clock before the ⊙ 15' 50"
26	17	0	0	○ in conj. with τ in Leo.
30	0	0	0	Clock before the ⊙ 16' 13"
30	4	34	0	☾ in ○ or last quarter
30	11	0	0	☾ in conj. with 1 α in Cancer
30	12	0	0	☾ in conj. with 2 α in Cancer
31	11	0	0	☾ in conj. with • in Leo.
31	20	0	0	☾ in conj. with τ in Leo.

☽ The Waxing Moon. — ☾ The Waning Moon.

Rotherhithe. **J. LEWTHWAITE.**

METEOROLOGICAL JOURNAL, FOR AUGUST AND SEPTEMBER 1828.

1828.	Thermo.		Barometer.		Rain in inches.	1828.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.			Hig.	Low	Hig.	Low.	
AUG.						SEPT.					
26	73	52	30,26	Stat.		11	68	50	29,56	29,55	,225
27	71	49	30,25	30,20		12	64	57	29,46	29,35	,25
28	73	50	30,16	30,13		13	68	56	29,56	29,46	
29	71	51	30,12	Stat.		14	54	48	30,02	29,86	,325
30	70	56	30,12	30,09		15	62	44	30,31	30,16	,05
31	63	53	30,06	30,00		16	59	36	29,48	29,46	
SEPT.											
1	72	55	29,96	29,90		17	62	37	30,31	30,20	
2	70	52	29,93	29,92		18	65	45	30,01	29,99	
3	65	45	30,00	Stat.		19	68	43	30,02	29,96	
4	68	51	30,02	Stat.		20	66	42	30,12	30,10	
5	66	49	29,96	Stat.		21	67	37	30,12	30,04	
6	66	43	30,00	29,96		22	64	42	29,92	29,91	
7	73	55	30,00	Stat.	,05	23	67	48	30,05	30,00	
8	74	53	29,95	29,81		24	68	51	30,04	30,00	
9	70	56	29,86	29,73	,05	25	71	51	29,92	29,84	
10	66	45	79,29	56,29	,025						

LOWER EDMONTON. CHARLES H. ADAMS

Lat. 51o 37' 32" N. Long. 3' 51" W. of Greenwfch.

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low's Power Engine.

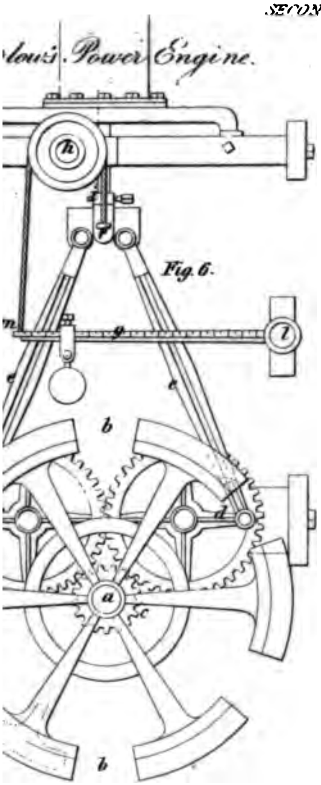


Fig. 6.

Williams's Surgical Instrum

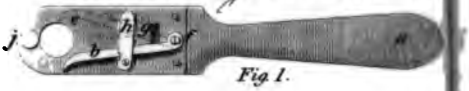


Fig. 1.

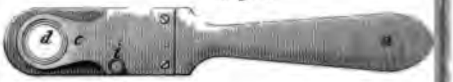


Fig. 2.

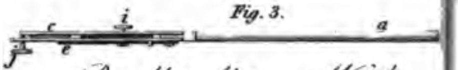


Fig. 3.

Berolla's Alarum Watch.

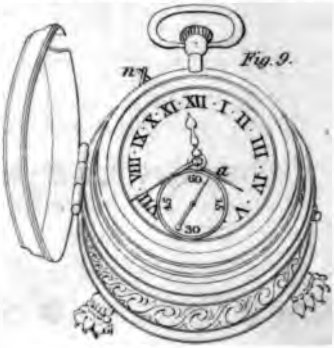


Fig. 9.

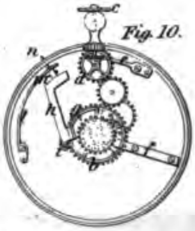


Fig. 10.

dmarsh's Capstan.

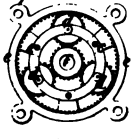
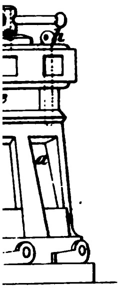


Fig. 8.



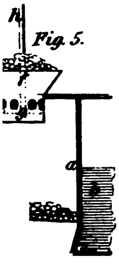


Fig. 5.

Hall's Steam Appts

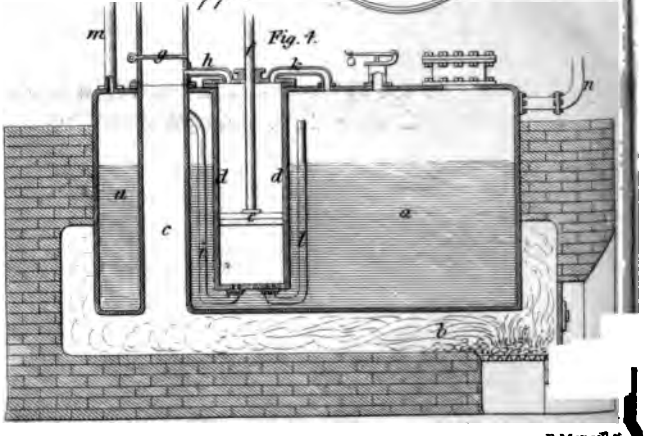


Fig. 4.

F. Mansell sc.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. VIII.

[SECOND SERIES.]

Original Communications.

ART. III.—DESCRIPTION OF AN INSTRUMENT FOR EXTRACTING THE CATARACT FROM THE EYE. BY THOMAS ROBINSON WILLIAMS, ESQ.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—At one time, when the study of Surgery was the amusement of my leisure hours, I had proposed improvements in several instruments then in use—one of these (the Retreating Spring Lancet) which you have described in a former Journal,* has been extensively introduced, and I believe almost exclusively used in the army and navy of the United States of North America (as well as in some countries on the continent.)

The present instrument, together with several others, I have not yet had time and opportunity to offer to the attention of the faculty. If, however, your notice of it will tend to make it useful, or even to draw attention to a subject by which any improvement may be made in an operation of which, in the present manner of performing one of the most eminent practitioners has said, "that he lost a hatful of eyes, before he became a successful master of the operation," it would be conferring a benefit upon our fellow creatures, who are thus afflicted.

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* See Vol. XII. First Series, page 144.

My object in this instrument is to make the incisions with more accuracy—much greater facility—and by which to occasion less irritation in so delicate an organ; the effect of which irritation is often to occasion a collapsing of the membranes of the eye, which throws out its contents, and of course precludes success in the operation.

The manner of using the instrument is easily understood, by reference to the drawings (see Plate III. Figs. 1, 2, and 3,) the first figure being the outer form of the instrument; the second, the opposite or inner form; and the third the edge view.

The instrument is held by the handle *a*, with the blade *b*, uppermost; and the under plate of silver *c*, is slipped under the eyelids; the edges of which keep them sufficiently out of the way. The circular hole *d*, in the under-plate, is then placed, so as to allow of the cornea of the eye to project through it, as well as through the corresponding hole in the upper plate *e*, on which rests the blade. The blade *b*, is a little curved, and acts upon a centre *f*, being pressed upon by a strong spring *g*, behind it, shewn, by dots, as though seen through the metal.

This blade having been first set up, by passing it by the thumb nail from the position seen in Fig. 1, to that shown by dots, it is ready for use, and is retained in that situation by a catch in the back part of the spring *h*, and is thus held, until disengaged by a small button *i*, which, when pressed with the fore-finger (when the instrument is properly adjusted), causes the spring catch *h*, to recede, when the lancet or blade *b*, is instantly brought down bythe spring behind, and its point passes over one half of the hole in the upper plate.

There is a small screw *j*, by turning which the upper plate, together with the blade, is raised or depressed, so as to bring the iris up, nearly to a level with the upper plate; this plate being perfectly level, it must be evident that it is easily adjusted with great nicety to the edges of the iris. When that is done, a slight pressure is exerted upon the handle, which holds the eye in that position, without the aid of any other instrument; and the blade being set, as above described, to the proper height, which should be as near the level of the iris as possible; the button *i*, is pressed, and the lancet or blade instantly passes through the cornea, and the incision is completed.

By exerting a proper pressure upon the instrument at the instant of making the incision, I have frequently succeeded in disengaging the lens of the eye, and catching it upon the instrument; but in general, it had better be extracted in the common way—the object of the instrument being that of making the incision safely and accurately, which operation is attended with so much difficulty, and requires so much care and experience, when performed by the lancet as in the ordinary mode of performing the operation.

I remain, respectfully yours,

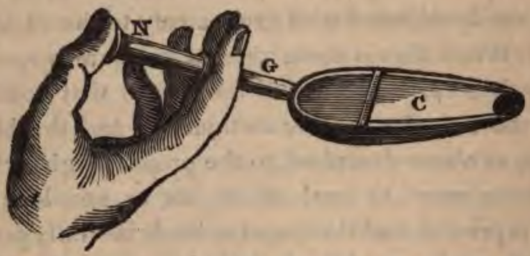
T. R. Williams.

17, Norfolk Street, Strand, London.

ART. IV.—GIBSON'S MEDICAL SPOON.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—As you have not yet furnished an account of the new *medical* Spoon, and as the modesty of the ingenious inventor may prevent the publicity, which should be given to so useful a contrivance, I forward a sketch, and a few particulars to illustrate its use.



Mr. Gibson was rewarded by the Society of Arts with the *Isis Medal*, and its use has been strongly recommended by the faculty. The spoon may be considered as a complete hydro-pneumatic instrument, of which the thumb at *n*, forms the vent peg; the circular disk and tube *g*, enables the operator to hold the spoon firmly in the hand. It is very useful for giving medicine or food in a recumbent position, and the patient cannot either taste or resist its introduction into the stomach by the ordinary passage. The fluid is introduced at *c*, and the lid being closed, the spoon is inserted in the mouth; the moment the thumb is removed, it begins to flow; and should any sensation of choaking be experienced, it may be again placed near the aperture. It may be proper to add, that in a recent case of "lock jaw," the patient's life was preserved, by inverting the spoon, and then removing the thumb.

I cannot conceive a more beautiful application of the science of pneumatics than is here shewn. It is second only to the *stomach-pump;* and from its more general application, may be considered of greater general utility.—I know, Gentlemen, the value that you attach to improvements in popular science, which must plead my excuse for trespassing on your pages.

I remain yours, &c.
MEDICUS.

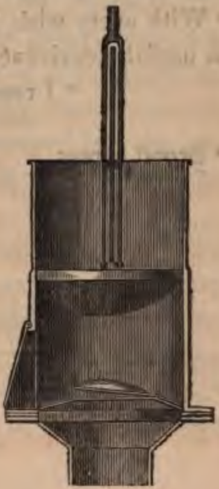
ART. V.—IMPROVED SHIP'S PUMP. BY FREDERICK LEAR.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—As your work may be considered to be a record of every new and important improvement that occurs in useful machinery, I take the liberty of forwarding an account of my improved ship's pump; I also subjoin an estimate of its merits, from the pen of Dr. Birkbeck, whose favourable opinion will, I trust, alone be sufficient to entitle it to the attention of your readers.

I remain yours, &c.
F. LEAR.

The pump shewn in the annexed figure, in its general arrangement, resembles those employed for hydraulic purposes; but its advantages over those now in use are the impossibility of its being choked, its cheapness and durability, its simplicity, and the great saving of labour in working it. By referring to the engraving, it will be clear that all substances whatever, coming up through the suction pipe, must instantly be ejected from the dis-



charged valve. Should long pieces of rope, &c. stop the working of the pump, it may be cleared, by lifting up the side valve, and thus the tedious process of taking out both boxes, as in the common pump, is avoided.

" *To Mr. Lear.*

" Sir,—I have attentively examined the construction of your pump, and have considered it, especially in reference to the purpose to which it is intended to be chiefly applied. Of its superiority to other forms, in all the particulars pointed out by you, I cannot entertain the slightest doubt; when for example, it is applied to ships, it may be used without any danger of being choaked; first, because of the ready outlet afforded, both from the suction pipe into the barrel, and from the barrel outwards; and, secondly, because if obstructed, the hand may be introduced with the greatest facility, to remove from the suction valve the obstructing cause. It is obvious that the pump will work with less labour than the pumps that are commonly employed, and that it will be less expensive than any others at all effectual, with which I am acquainted.

" With every wish for your success in the extension of your useful contrivance,

" I remain, very faithfully yours,

" George Birkbeck."

" Broad Street.

Recent Patents.

To William Wilmot Hall, *of the City of Baltimore, in the United States of North America, at present residing in the City of Westminster, Attorney at Law, in consequence of a communication made to him by a certain Foreigner, residing abroad, for a new Invention of an Engine for Moving and Propelling Ships, Boats, Carriages, Mills, and Machinery of every kind.*—[Sealed 15th January, 1827.]

The subject of this Patent, though stated in the title to be the " invention of an engine for moving and propelling ships, &c." is not, in fact, any novelty in the construction of the engine, but merely in mixing heated air with the steam in the boiler, for the purpose of increasing its lastic force.

The mode proposed for effecting this object, is by the introduction of an air pump within the boiler, the piston of which being worked by the rotation of the fly-wheel, or other ordinary evolutions of the engine, causes the hot air from the flue of the furnace to be pumped into the boiler, and there to mix with the steam, for the purpose above-stated.

Plate III. Fig. 4, represents the section of a steam boiler *a*, *a*, having the furnace *b*, beneath, and the flue *c*, carried up through the boiler. In any convenient part of the interior of the boiler, a cylindrical pump barrel *d*, *d*, is immersed, having communicating passages leading from the flue through the pump to the upper part of the interior of the boiler.

The piston *e*, is proposed to be packed by coils of fine wire passed round it, and the rod *f*, working through a stuffing box, is to be connected at the top, to the moving parts of the engine; a damper *g*, is placed in the flue *c*, to regulate the heat.

The pump barrel may be said to be divided into two chambers by the piston; a tube *h*, leads from the flue to the upper chamber, and a tube *i*, from the flue to the lower chamber of the pump. Corresponding tubes *k* and *l*, lead also from the upper and lower chambers of the pump, to the interior of the boiler, near its top. The seats of the valves are proposed to be coated with platina. The boiler is supplied with water through the pipe *m*, and the steam passes off to work the engine through the pipe *n*.

" The piston of the gas (hot air) pump being driven by the engine, the operation is produced in the following manner:—The engine is first set in motion by steam; the register (damper) is then closed. Now on the ascents of the piston, the inlet valve of *i*, will be opened, and the lower chamber of the furnace will be filled by the smoke and hot elastic fluids issuing from the chimney; whilst the outlet valve of *l*, will be kept shut by the pressure of the steam in the boiler.

" In the same manner, on the descent of the piston, the inlet valve of *h*, will be opened, and the upper chamber of the pump will be filled by the smoke and hot elastic fluids issuing from the chimney; whilst the outlet valve of *k*, is closed by the steam in the boiler. Thus the upper and lower chambers of the gas pump alternately receive a supply of heated elastic fluids from the chimney, through the tubes *h* and *i*, respectively.

" It must be borne in mind, that these fluids do not here communicate any motion to the piston of the gas (hot air) pump, they are merely passive; the hot air rushing into the pump to fill the vacuum, which would otherwise be occasioned by the ascending and descending motion of the piston, received from the engine.

" On the descent of the piston of the pump, the inlet valve of *i*, closes, and the compression of the fluids contained in the lower chamber augments their elasticity, till it overcomes that of the steam in the boiler. The outlet valve of *l*, then yields to the pressure, and the contents of the chamber are driven at a high temperature into the boiler, where they mingle with the steam.

" On the ascent of the piston of the gas pump, the same effect is produced in the same manner. Thus the upper and lower chambers of the gas pump alternately discharge their contents into the boiler, through the tubes *k* and *l*, respectively."

The Patentee contemplates that a different arrangement of the furnace may, in some cases, be desirable; for instance, when the furnace is placed within the boiler, he would recommend it to be formed, as shewn in section, at Fig. 5; in which *a*, *a*, is an iron cylinder, placed vertically in the boiler *b*, *b*, and surrounded by water; *c*, is the furnace, with open grating at bottom, for the supply of air; a flue or chimney *d*, may issue from the top, or any other convenient part. The furnace is to be supplied with fuel from the hopper *f*.

The lower part of the hopper is to be cylindrical, open at bottom, with a piston *g*, working in it. The sides of the cylindrical part of the hopper are perforated with holes, and the upper end of the piston rod *h*, is to be connected to the working part of the engine, for the purpose of raising it a few inches, at every rotation of the fly-wheel. Every time that the piston *g*, rises, a small portion of the coal falls through the holes in the sides of the cylinder, and so supplies the fire with fuel.

Instead of the double acting gas, or hot air pump, described above, a single acting pump may be employed, that is a pump, "with only one inlet tube and valve, and only one outlet valve, which valves may either be in the top or bottom of the gas pump. The packing of the piston may, in that case, be of brass. Or instead of immersing the pump in the boiler, it may be applied to it externally."

The Patentee thinks, however, that this last described arrangement is much less advantageous than that first pointed out.

When engines with the above contrivances are erected in foundries or manufactories, where large fires are kept, the pumps may drive these supplies of hot air from the chimnies through tubes; the flues being closed by registers or dampers, above the tubes which lead to the pumps.

The Patentee says, "as to the proportion, which the gas pumps ought to bear, to those of the working cylinder, I recommend that the entire measure of the former be to that of the latter, as 169 to 256, or thereabouts. The dimensions of the working pump are to be so calculated, that its excess above the dimensions of the gas pump will give the required power to the engine."

It is stated, in conclusion, that the invention may also be very advantageously employed for heating great quantities of liquids in wooden vessels.—[*Inrolled March*, 1827.]

To ROBERT BARLOW, *of Jubilee Place, Chelsea, in the County of Middlesex, Esq. for his having invented a new combination of machinery, or new motion for superseding the necessity of the ordinary Crank in Steam Engines, and for other purposes, where power is required.*—[Sealed February 1, 1827.]

THIS invention is a combination of toothed gear, to be adapted to a steam or other motive engine, in place of the crank.

The Patentee says, " I combine three wheels with an impetus wheel, which, from its peculiar form and make, I call a *beetle impetus*, and which may be made hollow, and the beetles and arms so loaded with quicksilver, as to create an immense power; two or more of which may be added, if necessary, (combined, we presume.)

The description of this invention, as given in the specification, does not appear to us to convey the Patentee's intentions in very clear, or intelligible terms; least, therefore, we should mistake his meaning, we quote the original literally. " Two leaves or slings, a union head or cap, a pulley, steelyard, and a shifting weight, (are connected, we suppose) the magnitude of the wheels, levers or slings, union cap, pulley, steelyard and weight, respectively, being proportionably adjusted to the stroke and power of the particular engine, as desired—when the *motion* (mechanism) is adapted for other purposes."

Plate III. Fig. 6, " is a front view of the *motion*, (mechanism) as attached to a single steam engine, complete for action, with the cylinder inverted; the piston standing at half stroke; *a*, is the axis or shaft, where the machinery to be put in action is to be attached; *b*, *b*, is the impetus wheel, or the series of beetles; *c*, is the pinion or small wheel; *e*, *e*, are the levers or slings, which are attached by screws and nuts to the large wheels *d*, *d*; and to the cap or union head *f*, to which is screwed a socket; *i*, with pin to confine the toe of the piston rod; *g*, is a steelyard, on which is a slide and weight, to adjust and reduce the repulsive power of the friction, take off the labour, and give ease to the action of the piston.

" One end of this steelyard is sustained by a screw at *l*, and from the other end of it *m*, is conducted a cord, gut, or chain, over the pulley or wheel *h*, to the centre of the union head or cap *f*, to which the cord gut or chain is attached. The steam entering into the cylinder, underneath the piston, raises it and the rod; then drives the cap or union head upwards rectilinearly, and puts the whole *motion* (mechanism) in action. When the piston reaches the top of the cylinder, the steam being introduced, depresses it above, and the piston rod drives the cap or union head downwards rectilinearly; thereby continuing the action of the machinery, during the rise and fall of the piston. The weight on the steelyard, operates to diminish the vibration and friction, and to equalize the motion."

The remainder of the specification describes different views of the apparatus, and its parts in detail, and concludes by saying, " the pump with condensor will, &c. I do not describe, as not belonging to my patent;" that is, the engine which is to put this apparatus in motion, forms no part of the invention.—[*Inrolled August* 1827.]

That part of the invention, called the *beetle impetus*, does not appear to be very intelligibly explained. Its being made hollow, and " the arms so loaded with quicksilver, as to create an immense power," we do not, at all comprehend. How the loading with quicksilver is to create power, has not been explained; in fact, the notion is absurd, and seems to be a revival of one of those perpetual motion schemes, intended to act by the centrifugal tendency of the quicksilver in the hollow arms, after the wheel (beetle) is put in motion.

The beetle impetus, as it is called, is nothing more than an ordinary fly-wheel, governing or regulating the rotation of the two-toothed wheels, which are merely cranks, connected to the sweep rods; but with the disadvantage of a very considerable quantity of friction, from which the ordinary crank is exempt.

It is not much to be wondered at, that so many crude schemes of the perpetual motion kind, should emanate from persons who are mere dabblers in machines, with little, if any knowledge of the science; but it is really surprising to find that the Repository of Arts, a work professing to be scientific, should suffer such barefaced falsehood and outrageous nonsense, as the following remarks upon the above patent, to incumber its pages:—

"This motion is both original and universal; it is capable of being applied to all kinds of machinery, and can be used with or without steam. It supersedes the use of the ordinary crank in steam engines, the robinett, beam, parallel motion, and external fly-wheel, reduces friction, neutralizes all extra contending power, and leaves no other labour to the piston but the work intended to be done.

"Its power, compared with any other engine of the same stroke, size, and cylinder, is as six to one; and its velocity is as two to one. It is simple in its combination, uniform in its action, and will work equally in every position. It is a first, direct and perfect rectilinear motion; its movement is smooth and easy, and its mobility is freed from that limitation of power, which in all other engines is caused by the number of reciprocating movements made use of, to obtain an alternate perpendicular action of the piston.

"It is portable, and from its simplicity, can easily be attached to any sort of machinery, by a common machine. It is applicable to the propulsion of ships, canal and other boats, to carriages of every kind, to the working of ships chain, and other pumps, and to all descriptions of machinery.

"The following are the advantages obtained over every other engine, by the adoption of the *motion*, viz.—An increase of power, a great reduction in fuel, a saving of room, a decrease in weight, a diminution in the cost of erecting an engine."

To Ralph Hindmarsh, *of the Town and County of Newcastle-upon-Tyne, Master Mariner, for his having invented, or found out an improvement in the construction of Capstans and Windlasses.*—[Sealed February 1, 1827.]

The object of this improvement is to enable a capstan or windlass to be occasionally worked with increased power, which is proposed to be effected by placing toothed gear, partly in the drum head of the capstan, and partly in the upper part of the barrel.

The drum head, and also the barrel, turn loosely upon a central spindle, independent of each other, and are connected together either by the toothed gear, or by bolts. On raising or withdrawing the connecting pinion from the toothed wheels, and then locking the drum-head and barrel together, the capstan works with a power, only equal to that exerted by the men at the capstan bars, as an ordinary capstan; but on lowering the pinion into gear with the wheel work, and withdrawing the bolts, which locked the drum-head to the barrel, the power exerted by the men becomes increased, in proportion to the diameters and numbers of teeth in the wheels and pinions.

Plate III. Fig. 7, is the external appearance of the capstan. Fig. 8, a horizontal view of the toothed gear, at top of the barrel. The barrel, with the whelps *a*, *a*, turns loosely upon a vertical spindle, fixed into the deck of the vessel. The drum head *b*, also turns loosely upon the same spindle. The circular frame *c*, *c*, in Fig. 8, in which the axis of the toothed wheels *d*, *d*, *d*, are mounted, is fixed to the central spindle. The rim *e*, *e*, *e*, with internal teeth, is made fast to the top of the barrel; and the pinion *f*, which slides upon the spindle, is connected to the drum-head.

When it is intended to work the capstan with ordinary power, the pinion *f*, is raised up into the recess of the drum-head, by means of a screw *g*, which throws it out of gear with the toothed wheels, and it is then locked by a pin *z*; the bolts *h*, *h*, are then introduced for the purpose of fastening the drum head and barrel together, when it becomes an ordinary capstan.

But when it is required, that the same number of men shall exert a greater power, the bolts *h*, are withdrawn, and the pinion *f*, lowered into gear, with the toothed wheels. The rotation of the drum head, then carrying the pinion round, causes it to drive the toothed wheels *d*, *d*, *d*, and these working into the toothed rim *e*, *e*, attached to the barrel, cause the barrel to revolve, with an increased power.

Thus, under particular circumstances, a smaller number of men at the capstan or windlass (which is to be constructed upon the same principle), will be enabled to haul in the cable and anchor, or warp off the vessel, which is an important object to be effected.—[*Inrolled July* 1827.]

In 1819, Captain Phillips obtained a patent for certain improvements in capstans, a part of which invention is precisely the same as this in principle, though slightly varied in its adaptation. See Vol. II. of the First Series of this Journal.

To MALCOLM MUIR, *of the City of Glasgow, for his invention of certain Machinery for preparing Boards for Flooring, and other similar purposes.*—[Sealed 1 June, 1827.]

THIS machinery is of the same kind as that employed in the dock yards at Portsmouth, and originally projected by Mr. Brunel, for cutting wood into various shapes for ship building. It partakes also of the principles of the ordinary saw mills.

The boards to be cut or grooved, are placed one at a time upon a sliding bed, mounted upon a long bench, and are progressively advanced and brought under the operation of planes and circular saws and gauges, or other revolving cutting tools; the whole of which is actuated by a rotatory power, derived from a steam engine, water wheel, or other first mover.

As the board slides along, the face is plained on the under side, and the edges cut into grooves and tongues, or rebates.

This machinery is, of course, of very considerable magnitude, and contains many minute parts, or mechanical contrivances for effecting the different movements. It is, however, represented, in the inrolled specification, by several small perspective views, which only exhibit part of the details of the construction, and these upon so small a scale, that such a reduction of the figures as would be necessary to bring them within the compass of our Journal would render them altogether unintelligible. We are, therefore compelled, in this instance, contrary to our usual practice, to substitute the above brief report of the invention, instead of a more detailed description.—[*Inrolled August* 1827.]

ART. VI.—ON THE LAWS RELATIVE TO PATENTS.

BY M. DE JONGH, ESQ.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—The spirited letter of Vindicator in your last number, induces me to offer my ideas on the subject of the existing Patent Laws and Legal practices, relative to New Inventions and Discoveries.

As no part of the laws of this land appears to me to call more for alterations and improvements than the Patent Laws, and as I flatter myself I am sufficiently acquainted with the subject, not only to point out its imperfections and consequent evils, but also to suggest sound remedies for the same; and considering that by so doing it may perhaps prove beneficial to the public at large, I am induced to give publicity to my sentiments on this point, through the medium of your widely circulating Journal.

Before I enter into the particulars of these evils, permit me first to premise the nature of a patent grant, and its dependance upon the established laws; this is done in few words, the grant is a prerogative vested in the king, and subjects the patentee to certain conditions to be observed and performed by him, and of the non-performance of these conditions the law takes cognizance upon complaints being made by *scire facias*, or, in case of actions for infringements; but I hold that the constituted courts of justice, however wisely and properly instituted, for adjudging all other kinds of litigations, are totally incompetent to decide upon all sorts of differences upon patent

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Note.—The above Communication did not arrive until the first sheet of our Journal had gone to press. It is, however, of too much importance to be postponed; we have therefore thought it desirable to interrupt our arrangement for the purpose of its immediate insertion.

rights for discoveries in Arts and Sciences, because the most profound philosopher cannot, in some cases, discriminate where the exact shade of an infringement ends, and the new invention begins; how then, can it be expected that twelve persons, indiscriminately appointed on a jury, can, in such cases, judge rightly? A man's life is hardly long enough, if all his time be applied to the study of Arts and Sciences, especially in mechanism and chemistry, to acquire deep-rooted knowledge sufficient to sit in judgment upon these matters; how then, can it be required from a judge, most of whose time has been absorbed by other studies, certainly not less commendable and useful, but nevertheless of a different nature?

I would ask, whether it can be possible that, during a trial touching the mechanical operations of a machine in the least complicated in its motions, the judge and jury can be made to understand the machine? Nay, I even hold that many a learned judge and an ordinary jury may study specifications of certain machines for months, and know only as much of them in the end as they did before; indeed, it cannot be expected that they should understand them: it will consequently be apparent, that in such cases, the judge and jury are not competent to decide justly.

It is true they hear counsel and evidence, but do they sufficiently understand it? and if even such chosen evidence were produced as could throw much light upon the subject (but which is not always the case), what can be elicited from them, but such matters of fact as require no wisdom to discern? they can state whether they saw machines at work, similar to that which is the subject of the then trial; but if not exactly so, they can only give their opinion that they think it similar in "principle," (a word, by-the-bye, generally used, but little understood, of no definition at all, or of many definitions, if applied to the arts), and I know that this kind of evidence is generally required and given. If then that sort of evidence is to rule, the judge and jury being ignorant of the main points, the witness becomes the judge, but ask such witness whether he will swear, that although the two machines appear to him to be alike in effect, and to cause these effects, screws, wheels, levers, and other mechanical agencies have been applied in both, whether he can assert that the ideas of the two inventors in working these said mechanical agents, were not quite different from each other in producing the desired effects, by two totally different combinations of understanding? Nine out of ten will in my opinion answer, "I cannot say." I speak of nice points of discrimination, and which I have known to occur, for instance, even in cases of no complex machinery. A. finds out, that if delivering and drawing rollers be heated, it will materially facilitate the operation of drawing and spinning animal wool; for this discovery, he applies for, and obtains a patent.

Now such a discovery cannot be of any use to the public, till some other ingenious person finds out how such rollers can be heated; this, we will suppose, however, is found out by B. who, by an ingenious process, passes steam through the rollers, and thereby obtains the desired end; it is at the same time quite uncertain whether A. would ever have found how to heat these rollers, and the public is in this instance, therefore, as much benefited by B. as by A.; yet A. brings his action against B. for infringement; how is a court, as now constituted, to decide upon such a question? In the first place, is such a patent as A.'s maintainable? namely, having found out that a certain cause will produce a good effect, without being able to show how this cause can be brought into action. If it be maintainable, is it not to be lamented that the ingenuity and real practical advantage of B.'s discovery, should be visited with punishment instead of reward?

Now, I ask, where is the definition of our laws to be found, which is to guide the judge, jury, or the parties themselves, in such a case? And by what point or rule of law can my question be answered, "whether A.'s patent is tenable or not."

Again, C. obtains a patent for constructing a press by means of bringing oblique links in a vertical position, thereby alienating two planes; D. also obtains a patent for effecting the same purpose by eccentrics; C. brings his action against D. upon the grounds that the links act in their operation like so many radii in the eccentric, the operation is therefore mentally the same; who can decide this question by law, and whereby can any one judge, whether or not he is safe in applying for a patent? Permit me further to ask, whether such uncertainty and perplexity does not tend to check ingenuity to the prejudice of the nation? This defect in the legislature must, therefore, be accounted one of the various evils which it is my wish to bring under public notice.

I now beg leave to point out what I conceive to be evils in our system of patents; when a person applies for a patent, he makes affidavit that he has discovered or invented something which he briefly sets forth, and which, to the best of his knowledge, has not been known before; he obtains a patent, and is allowed two, four, or six months to lodge a specification, in other words to disclose his secret. Now I hesitate not to say that it often happens that the secret disclosed by the patentee is not that sworn to in his affidavit; the fact is, that as now and then a patent right proves profitable to the owner, and people's minds being much occupied with various devices for gain, some imagine to have made a valuable discovery, which, if secured by patent right, will be a source of wealth to them. In high expectations they apply for a patent, and delight in the golden dream; but when their invention is put, or attempted to be put in practice, alas, the pleasing vision gets clouded with darkness, and gradually disappears; they awaken from their dream, and find the delusive object of it to be a phantom, yet unwilling to part with such pleasing anticipations on easy terms, they rack their brains, and search for every resource in their heated imaginations, till, in the course of their various experiments, they flatter and console themselves to have at last hit upon some things that may be made to correspond with the title of their patent, and accordingly specify, *not what they have sworn to in the first instance,* but that which they have *since discovered.* In other instances, the patentee sometimes find out that the discovery he made is not new, and in such case shifts about to something else that shall be new, and agree with the title of his patent; is not this also an evil?

On the other hand, it is to be regretted, that no patents can be obtained without paying very large sums for them; many an honest industrious mechanic, not possessed of sufficient means to go to such serious expenses, is not only deprived of the just rewards for his labours and talents, but the community at large is deprived of its benefits; is this right?

And is it not to be lamented, that a hard labouring mechanic, who has by dint of persevering bodily and mental application, discovered a valuable and beneficial machine, cannot secure the right of it for fourteen years, without paying a heavy sum? whilst an author in literature ensures his copyright for fourteen years (or if he lives longer), for life, at a very trivial expense.

Not one of the smallest evils is the following:—If one of several inventions included in a patent, or part of one invention, happens to be proved untenable, the patentee loses the right of the whole! I cannot possibly view this system in any other light than as one bordering on iniquity, and not grounded on sound reasoning; indeed, this appears to me so preposterous, that I must beg to indulge with a comment upon it.

It cannot be supposed that any patentee will be so foolish as to take out patents for what he knows to be not new; (saying nothing of his conscience with regard to his affidavit,) he can therefore have merited no punishment whatsoever. Why then, I ask, is severe punishment inflicted, if unfortunately for him, one of his discoveries, or a part of what he has discovered, has been found out by others before, but unknown to him? Let me not be misunderstood. I do not allude to the failure of his patent right in case his invention is proved not to be new; this I think right enough with some modification which I shall point out hereafter; because the public benefit does not require that more than one patent shall be granted for one discovery; but I contend, that it is excessively hard and unreasonable towards a patentee, who includes more than one feature of invention in his patent, that he should lose the whole because one of those features has been known before! Nay more, if they be so many machines composed of many motions each, claiming them as his inventions, and but one of these motions has been invented before, although not one thousand part of the invention for which that patent has been granted, he must lose the whole.

The time allowed for specifying, without power to amend or alter the specification after enrolment, also subjects the patentee, sometimes, to hardship and inconvenience. For, I maintain, that in many cases longer time than is allowed, is necessary to bring into effect the operations of the discovery, so as to give full security to the patentee, and the full benefit of his discovery to the public.

If what I have adduced is groundless, I shall feel obliged to any one who can set me right; if not, it must doubtless be desirable to see improvements take place in the system and forms of our patent laws. I shall now suggest such legislative enactments and regulations respecting patents for inventions, as will, in my opinion, remove the evils I have adverted to.

That trying by jury is the most desirable and laudable mode of proceeding in a court of justice, needs not my approbation, and is founded in truth; yet it is not less true, that in some cases this mode has been found impracticable; hence, ecclesiastical courts, and separate codes of maritime law, have been found indispensibly necessary, chiefly because theology, and marine cases require different courses of studies, and different researches from common law; the former, though grounded on common sense, cannot be understood without learning; of the latter, unstudied men may form correct ideas. Juries of men, indiscriminately taken, can therefore be of no use in these courts, to which I may add the court of equity.

Just so stands the case with regard to patents, which absolutely require a separate court of justice, under the controul of judges and pleaders, who have successfully studied Arts and Sciences, and are well versed in them. Acknowledged great and respectable professors in the various branches of philosophy, would be fit persons to preside in such a court. I would therefore propose that such a court be established by government, and to that court the applications for patents should be made by sealed communications, containing a brief and cursory specification of the discovery, signed with an initial and marked with a seal (keeping back the real name, in order that the court cannot be charged with a partial bias.) Let a time be allotted for examination and answer; if the discovery is not thought worthy a patent, let it be denied, otherwise let a fiat be returned. Then, indeed a patentee may be proud of his patent, which, now cannot be the case, and so many worthless patents as are now extant would not exist. Then likewise may the expenses to the patentee be greatly reduced, without fear of too many applications for patents for frivolous pretences of valuable discoveries, and the party who so obtains a patent, could not abandon or shift from the original declaration of the discovery; if it be thought proper, the law may then require (namely, after a fiat has been returned), that an affidavit of the originality of the invention be made by the party applying, and the name or names to be disclosed.

A protocol ought to be kept in that court, containing the descriptions of the different patents, so arranged that any one of them may be easily referred to; and the court ought to refuse grants of patent right, if applications are made for discoveries which may be found previously entered; it will, perhaps, be thought difficult to examine thoroughly so large a number of patents as that protocol will in a few years contain; but I think this would not be the case. I believe that at present between 350 and 450* patents are granted in twelve months; of these 2-3rds to 3-4ths would, by such a court as before described, be thrown out as unworthy the grant of a patent; the number would therefore not be so large, and with the help of proper indexes and alphabetical arrangements, many thousand patents might without difficulty be referred to, and if, in years to come, this mode would be found too inconvenient, some other arrangement on this point might be made.*

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* The writer probably means, including these for Scotland and Ireland. The Patents granted in England, were for the year 1815, 247; 1816, 131; 1817, 149; and to the end of September of the present year, 112.

A discovery of something which would produce a desired effect; in other words, finding out a cause, not known before, capable of producing a desired effect, without being able to show how such a cause can be brought into operation, should be intitled to a patent, if judged by the court to be of sufficient importance; because such partial light would make it easier to other scientific men to dispel the remaining darkness of the hidden object sought to bring into broad light; but as it would be unjust that the perfecter of the discovery should enjoy all the fruits, both of his own labour, as also of that of the first inventor, who may perhaps have the greatest share of merit in the invention, I would let the latter have a right to bring the former into court, where it shall be decided whether or not the plaintiff's ingenuity and merit contributed to the success of the defendant, and if it did, adjudge a proportionate share of the defendant's profits to be paid by him to the plaintiff, leaving both patents valid; by these means, both will get their due without discouragement to the vigorous pursuit, in the promotion of knowledge tending to national advantage.

The great difficulty in trying nice cases of infringements would in a great measure be obviated, because the court would grant no fiat for a patent for discoveries, found, by referring to its protocol, not to be new. Infringement by one patentee upon another patentee could, therefore, not take place; and in case of any one, without having a patent, infringing upon a patent right, the court would not find it difficult to decide.

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* The London Journal of Arts contains a description of *every* Invention, which has been Inrolled since its first publication, and will continue to report all New Patents.

Improvements, corrections, or other alterations in the specification after enrolment, should be allowed within one year from the date of such enrolment, upon paying certain fees, and provided the court finds the alteration not to amount to a new discovery.*

If a discovery, for which a patent shall have been obtained, be not put into operation in three years from the date of the patent, such patent shall become extinct to the proprietor, and the discovery shall belong to the public.

I think that I have now briefly given the outlines of what I conceive would, in a rational and reasonable way, remove most part, if not all, the evils now existing in our system of patents; and it would give me great satisfaction to be as instrumental as my feeble powers will allow, in bringing such salutary changes to pass.

I remain, Gentlemen,
Yours, &c.
M. De Jongh.

Manchester, 26th Oct. 1828.

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* In France a Patentee is allowed to amend his Specification as many times as he pleases, during the term of his Patent right; the improvements forming part of the original Patent, the exclusive use of which terminates with the expiration of the first grant.—*Editor.*

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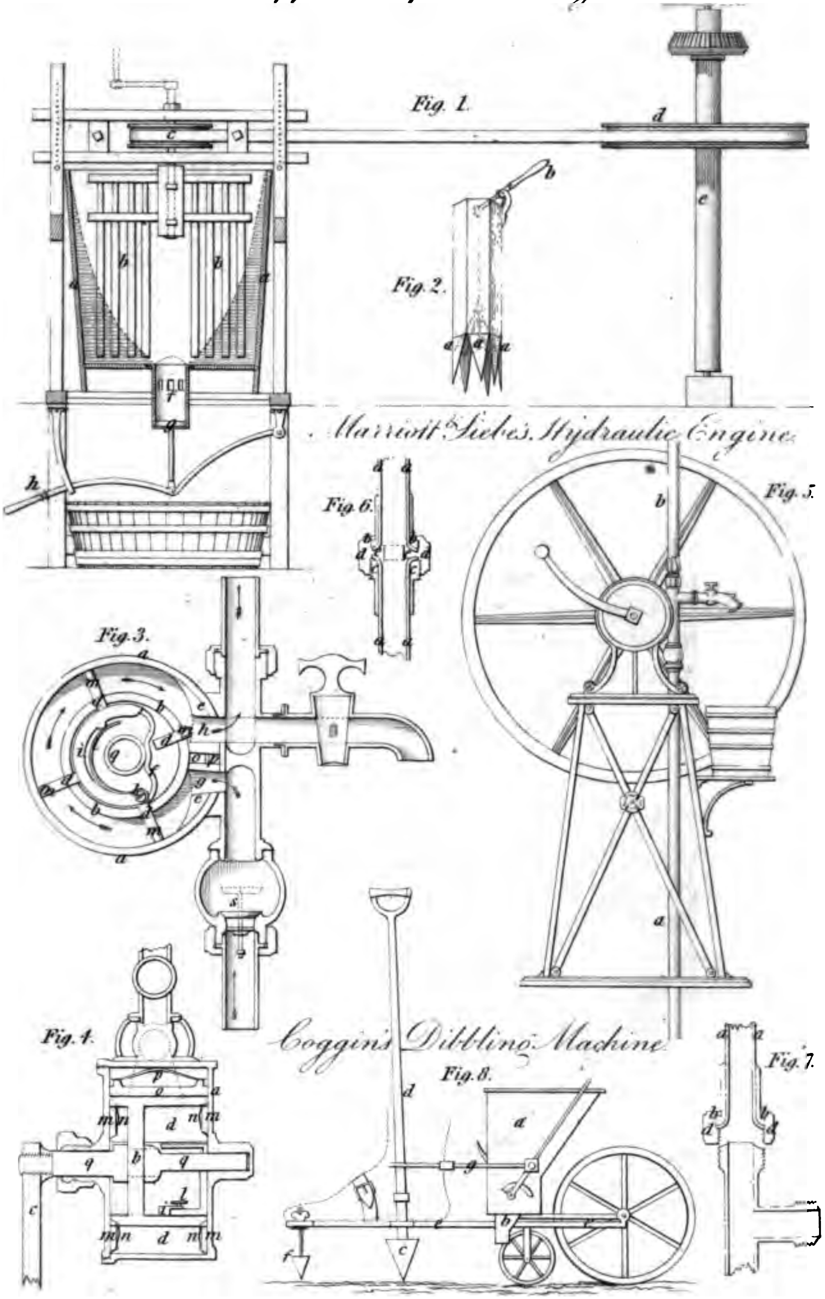
Harsleben's Apparatus for cleansing Ore &c.



Marriott & Siebe's Hydraulic Engine.

Coggin's Dibbling Machine.

RECENT PATENTS.

(Continued from page 68.)

To Charles Harsleben, *of Great Ormond Street, Queen Square, in the County of Middlesex, Esq. for his invention of machinery for facilitating the working of Mines, and for facilitating the extraction of Diamonds and other precious Stones, Gold, Silver, and other Metals, from the Ore, the Earth, or the Sand, which machinery is likewise applicable to other purposes.*—[Sealed December 13, 1826.]

This invention consists principally in an apparatus designed for washing pulverized ores, in order to cleanse them from the earthy matters, with which they are encompassed in the natural state. The object is to separate and cleanse the precious metals and gems from the soil in which they lie imbedded, but the same operation and utensils are also applicable to the cleansing of other ores.

The improved process is simply whirling the material round in a vessel of water, by means of a rapidly revolving stirrer; when the metals or precious stones, having greater specific gravity than the water or the earth which is mixed with them, they naturally sink to the bottom, and may then be collected in a heap by themselves. The other part of the invention is a mode of conveying a moving power to a distance, by means of a confined volume of water.

The Patentee defines his improvements under the following heads—" First, a new apparatus for separating diamonds and precious stones, and the ores of gold, silver and other metals, from the earth, sand, and stones, or other matrix, with which they may be found combined, by a process of washing, never before attempted; and which said apparatus and process may be applied to the separation of any other solid substances, which are of different specific gravities, and are not soluble in water.

"Secondly, in the construction and use of a new kind of apparatus, by the means of which the power of any steam engine, fall of water, animal force, or prime mover of any description, may be carried or transferred from the situation where it may be placed, or must work, to any distant situation where such power may be required without the elaborate and expensive machinery usually adopted."

Plate IV. Fig. 1, represents the washing apparatus, partly in section *a, a,* is a tub or vat, into which the stirrer *b, b,* is introduced, and is there made to revolve rapidly. This stirrer is formed by any number of perpendicular pieces, made fast to cross arms at top, which arms issue from a block in the middle, having a spindle or shaft, on which it revolves. A rigger *c,* is attached to this shaft, and a band passes round it, leading from a rotatory drum *d,* upon a vertical shaft *e,* at any convenient distance; the shaft being driven by a horse or a water wheel, a steam engine, or any other first mover: or the stirrer may be turned by manual labour, applied to a winch.

The pulverized materials intended to be washed, are introduced into the tub with a quantity of water, and the stirrer being put in rotatory motion, commencing slowly at first, but ultimately becoming very rapid, the water with the materials will from their centrifugal force by the rotation of the stirrer assume the eliptical position shewn in the section; and the particles of metal, as well as the precious stones, having a greater specific gravity than the earthy matters, will sink to the bottom, and form a heap, separate from the other lighter materials in the middle of the vat.

There is a peculiarly constructed cylindrical valve *f,* at the bottom of the tub, in which a piston *g,* is intended to work. The particles of metal or precious stones, as they deposit themselves, will fall into the chamber of this cylindrical valve; and the attendant, by occasionally raising the handle *h*, will cause these matters to be squeezed through the small holes, and fall into the tub below; after which they are to be further washed by a second and third operation as above described.

The Patentee has explained a multitude of variations and modifications of the above apparatus, in a very long and minute specification; but as the subject is not one of very general interest, we do not consider it necessary to enter into those particulars: they refer entirely to the stirrer.

It is proposed occasionally to employ the rotatory stirrer, without the tub—as for instance, in streams which flow from the neighbourhood of gold mines, where the waters bring down the metal in small particles. A stirrer may be mounted upon a frame placed in the water, and being made to revolve, will cause a deposit of the metal, upon the principle above described. The stirrer may be made to work down into the sand and loose earth, when the metals or precious stones that may chance to be deposited upon that spot will, by the rotation of the stirrer, be collected in a heap in the centre, at bottom.

In order to take up the material so collected, it is proposed to employ an instrument, shewn at Fig. 2, which is an hexagonal tube, with jointed pieces *a*, *a*, having points at the bottom. This tube being driven into the soil, exactly upon the spot where the metals or stones have been collected, the lever *b*, is depressed, which causes the chains, shewn by dots, to be drawn up, and consequently the pointed pieces to be brought together in the centre. The tube is then raised and the materials collected, brought up with it.

The second object of the invention, is stated to consist in "a certain means of transferring the force or power of a water wheel, steam engine, or any other prime mover of machinery, from the situation in which the same may happen to be placed to any distant situation where such power may be required for use, without the expense and loss of time, attendant upon the removal of such prime mover, which, in many cases, such as a natural water-fall, will not admit of being removed at all.

"I attach one or more truly-bored cylinders of metal, having pistons within them in the nature of pumps, in such a manner that they may be effectively worked by the same prime mover, whether it be a power obtained from wind, water, steam, or animal labour, or any other way: such piston being so attached by cranks, levers, beams, or any of the usual and accustomed means. The pistons so attached have no valves, but are made to work in a complete air and water-tight manner within the said cylinders, which must vary in number or magnitude, according to the amount and velocity of the power to be transferred.

"If the power is to be transferred in the simplest form of which my said invention is susceptible, I effect it by placing a single water-tight metal or other sufficiently strong and close pipe or tube, to the bottom of the cylinder or cylinders so connected with the prime mover as aforesaid, and having so conducted such pipe to the other situation to which I am desirous of transferring such power, I there cause such pipe to terminate in the bottom of another truly-bored cylinder, with a piston in every respect similar to the one at the other end of the pipe; or to several such pistons and cylinders, if more convenient.

"This done, the entire length of the pipe is to be completely filled, and the cylinders half filled with water, or any other incompressible fluid, and the pistons being put in their proper situations upon the water, the machine will be ready for action.

" In order to let the pistons come into actual contact with the water in the cylinders, such piston must have a small hole in it, for the escape of the air when fixing the apparatus, which holes are afterwards to be closed by air-tight screws.

" In the above-described modification of my apparatus, both the cylinders may have open tops, because the atmospheric pressure will be equal in both of them, and whenever the piston of the cylinder nearest to the aforesaid prime mover is depressed, it will press upon the incompressible water below it, and by driving it into the close pipe, will fill the cylinder or cylinders at the extreme end, thereby elevating its piston, or their pistons, and transferring the power, while a motion of the power piston, in the other direction, will produce an opposite effect, or depression of the piston at the opposite end."

Without going farther into this elaborate description, it will be perceived that the Patentee's intention is to communicate a mechanical force through a long tube or pipe, by moving a volume of water, the impelling force being applied to a piston at one end of the pipe, and transferred through the volume of water (which is considered to be incompressible), to the piston at the other end, which communicates the force to the body intended to be moved. This project is not illustrated by any drawings, but it is sufficiently obvious to perceive that it is precisely the same plan as that proposed by Mr. Vallance, for conveying intelligence from one place to another; the water moved at one extremity of the tube causing a sort of telegraph to be worked at the other extremity. See Vol. Xth of our First Series, page 117.—[*Inrolled June*, 1827.]

To Joseph Anthony Berollas, *of Great Waterloo Street, in the Parish of Lambeth, in the County of Surry, Watch Maker, for his invention of a detached Alarum Watch.*— [Sealed April 28, 1827.]

This invention is a new mechanical arrangement and combination of works, applicable to the locking and unlocking of an alarum watch, and likewise the novel construction of certain parts of the alarum.

The ordinary movements of the watch are not proposed to be altered, the invention being simply the new locking parts, which are to be attached to the alarum. The alarum wheel runs upon the arbor of the hour wheel, and carries the alarum hand, as seen in Plate III. Fig. 9, at *a*; this figure being an external representation of the alarum watch and its case complete, and shewn in perspective. Fig. 10, is a representation of the alarum works, as situate above the pillar plate, the dial being removed, to shew the interior. The alarum wheel *b*, need not have teeth on its edge, nor the connecting train be introduced, if the alarum were to be set, by turning its index *a*, with a watch key; but as it is proposed to set the alarum, by means of a rose bead *c*, at the back of the pendant, the train is introduced for the purpose of carrying the movement of the rose bead to the alarum wheel.

The rose bead *c*, being turned, causes a pinion upon its axle, taking into the teeth of the wheel *d*, to drive it round, and this, by means of an intermediate wheel, to turn the alarum wheel *b*, and consequently to set the index to the hour, upon the dial plate, at which the alarum is to be let off.

As it is necessary, from the arrangement of other parts of the alarum, that the rose bead *c*, should turn in one direction only, there is a small rachet wheel fixed on the axle of the rose bead and pinion, in the teeth of which a pall or spring click *e*, is made to act, for the purpose of confining it.

The alarum wheel *b*, has a hollow axle, the extremity of which, on the under side, forms a flat circular plate. This has a notch cut in it, for a pin in a spring detant, to fall into when it comes round to the time marked by the index, which is effected by a spring lever acting upwards, and the alarum, hitherto locked by the pall of the said detant is now released, and consequently the alarum goes off. The notch is straight down on the side where the pin falls, in order to give the discharge suddenly, but is inclined on the other side, so that by turning the alarum wheel, the pin of the spring detant may be raised out of the notch, and the alarum becomes locked again.

The spring lever (called the elevator), shewn in Fig. 10, at *f*, is screwed to the plate at one end, and has a circular aperture, through which the central arbor of the watch passes. This spring lever acts upwards, and presses the detant pin against the circular plate under the alarum wheel, until the movements of the watch brings the pin to the notch, when it instantly falls into the notch, and the spring lever rising, unlocks the alarum.

The extremity of the elevator *f*, projects, as at *g*, and there has a small enclined plane pressing against a similar inclined plane, at the side of what is called the propeller *h*, consequently when the elevator is down, the two inclined planes are in contact, and the propeller *h*, is kept back in the position, shewn in the figure; but when the elevator *f*, rises as above explained, then the propeller *h*, is set at liberty.

This propeller, as it is called, is merely a lever turning upon a fulcrum pin at *i*, its tail *k*, being pressed upon by a spring *b*, and what is called a locking piece *m*, from which locking piece, a pin extends outwards through the case as *n*, which pin is intended to take hold of, and confine the locking lever or alarum, as seen at *n*, in the external view of the watch and its case, Fig. 9.

Without entering into a description of the striking part of the alarum, it is sufficient to say, that it is proposed to be constructed in the ordinary way; the present invention being simply a mode of locking and unlocking the alarum part of a watch, to which it is to be attached.

Now supposing the locking apparatus, constructed in the way described, in Fig. 10, and attached to an alarum watch, as shewn at Fig. 9, the alarum is to be set to go off at a given hour (say four o'clock) either by turning the rose bead behind the pendant, or by setting the index by a watch key, when the ordinary movements of the watch have brought the notch of the alarum wheel, above described, up to the pin; the falling of the pin into the notch causes the elevator to rise and to release the propeller or lever *h*, which allows the spring to throw back the locking piece, and to draw the pin *n*, into the case, by which means the locking lever of the alarum (seen in contact with the pin at *n*, Fig. 9), being released, the alarum instantly goes off, and the blows of the hammer upon the bell enclosed within the case, are produced by the ordinary mechanism.

The Patentee concludes by saying, " The points upon which I ground my right of exclusive privilege are the new combination of machinery which I have produced in the detant, and its appendages, the elevator, the propeller, and the locker, in the watch movements; and that combined operation of these with the locking lever, and its wire tail, by which the above-described, or any other kind of alarum, may be set off and discharged: whether the same be detached from or attached to the said watch.

Likewise for the kind of case or support which I have adopted for holding, confining and containing the said watch, or other movement, in such manner that it may be attached or detached, and may form an elegant and useful article of ornamental furniture, while it will contain a larger bell, rattle, or other apparatus for producing a noise, than could possibly be applied in the size of a watch; whereby it may serve for wear, or other purposes, or may even answer the purpose of making a large striking movement, applicable to a small watch.

" But I hereby distinctly disclaim any exclusive right benefit or advantage to the individual wheels, levers, springs, or other parts of the movements above described; which I claim only in their combined and collective capacity."

" And I further disclaim any right or title to the invention of the train of wheels described as being necessary in either of the alarm movements; and likewise to the train of wheels hereinbefore described for moving the alarum hand from the pendant or other part of the movement, further than the same as already secured to me by a former patent obtained by me, dated 26th May, 1810, in which the same train of wheels is described as applied to a different purpose; my present Patent being for a new mechanical arrangement and combination of parts already well known, but now applied by me to the production of a new purpose and effect."—[*Inrolled June*, 1827.]

To Thomas Patrick Coggin, *of Wadworth, near Doncaster, in the County of York, Machine Maker, for his having found out, or invented a new or improved Machine for Dibbling Grain of every description.*— [Sealed May 19, 1827.]

This is an improved drilling machine, the mechanism of which is to be worked by the foot of the husbandman. It consists of a box (or in general two boxes, for it is proposed to be made double), containing the seeds of whatever may be intended to be sown. The apparatus runs upon wheels, and there are two conical dibbling irons, one larger than the other. These are ranged in a line with the delivering funnel of the drill, and at such distances apart as may be considered proper for discharging the seeds.

Plate IV. Fig. 8, is a side view of the apparatus; *d*, is the hopper, containing the seed and such earthy materials, as may be found necessary to deposit with the seed; *b*, is the funnel below, through which the seeds are passed; *c*, is the dibbling iron made conical, which is worked by a handle *d*. This dibbling iron and its handle are connected to two levers, the lower one *e*, which hangs to the axle of the principle running wheel, has at its front extremity a small cone *f*, intended as a marker; the upper lever *g*, works the axle *h*, of the cylinder, within the hopper which delivers the seed.

In putting the machine into operation, the ground being properly prepared, the foot of the husbandman is first strapped to the lever *e*, as shewn, by which he presses down the dibbling iron, at the same time turning round the handle *d*, by hand, he forms a true conical hole in the earth, ready to receive the seed; at the same time the depression of the lever *e*, causes the small cone *f*, to make a mark in the ground, where the dibbling iron *c*, is to be brought to at the next movement.

The foot of the husbandman now being raised, lifts the dibbling iron out of the hole, and brings it and the machine forward to the spot, previously marked by the small cone *f*. The pressure of the foot now as before upon the lever *e*, forces the dibbling iron into the ground, and another conical hole is made, in the act of doing which, the handle *d*, moves the small lever *g*, and that turning the delivering cylinder within, causes the seed and earthy matter to be deposited in the conical hole made by the former depression of the dibbling iron.

Thus by the successive operations of the machine as it advances, the points are marked at equal distances apart, where the seed is to be sown; the dibbling iron makes the hole, and the funnel delivers the seed.

It is only necessary to repeat that the parts shewn in the figure may be doubled, in which case, both feet of the husbandman may be separately attached to distinct levers *e*, and by walking forward, the operations of two dibbling machines will be performed at the same time.—[*Inrolled July*, 1827.]

To HENRY MARRIOTT, *of Fleet Street, in the City of London, Ironmonger, and* AUGUSTUS SIEBE, *of Princess Street, Leicester Square, in the County of Middlesex, Machinists, for their invention of certain Improvements in Hydraulic Machines.*—[Sealed 29th March, 1828.]

THE specification states that these improvements consists, "First, in a particular construction of hydraulic machines, commonly called Rotatory Pumps, for drawing, raising, and forcing all fluids and liquids, which may be worked by manual labour, steam, or any other power, the novel management of which is fully exhibited in the drawings hereto annexed, and will be explained hereafter. Secondly, lining the pump barrel or barrels with copper or brass, by casting the iron over the copper or brass. Thirdly, a new constructed union joint to connect lead pipes together instead of soldering, as is the usual practice. Figs. 3 and 4 are sections of the improved pump; *a*, is a barrel of brass or any other metal; *b*, a roller which revolves by a handle or winch *c*. This roller has openings or slits, in which the sliding paddles or pistons *d, d, d, d,* work up and down; *e, e,* are cams placed within the barrel, by which the sliding paddles *d,* are pressed into the roller as it revolves; *f,* is a cam within the roller, which drives the sliding paddles *d,* outwards.

By the rotation of the roller *b,* the paddles or pistons *d,* are made to produce a vacuum within the barrel, and in consequence the water flows up the rising main through the space *c,* into the barrel, and as the paddles *d,* go round, they force the water through an opening *h,* which conducts it wherever it may be wanted, and by that means produces a continual stream without an air vessel.

There is a lever *i,* within the roller, which swings on a pivot *k,* screwed into *f,* and *l,* is a spring which forces the lever *i,* against; the sliding paddles *d, d,* by which the sliding paddles are kept always tight against the periphery of the barrel, and consequently compensates for any portion which may be worn off the ends of the paddles by friction.

There are pieces of brass *m,* or any other suitable material let into the ends and sides of the sliding paddles or pistons, for the purpose of forming a metallic packing, which are forced by springs *n,* and kept tight against the sides of the barrel *q*; by these means the pistons are always preserved air tight, though subject to constant wearing; *o*, is another sliding piece of brass or any other substance, which is let into the middle of the cam *e*, this is also forced by a spring *p*, against the roller *b*, and is kept air tight between the opening *h*, and *c*; *q*, is the spindle to which the roller *b*, is attached, and revolves with it; *r*, is a stuffing box; *s*, a foot valve in the rising main, which holds the water.

Fig. 5, shews the outside of the working pump above described; *a*, is the suction pipe or rising main, and *b*, the force or discharge pipe.

Figs. 6 and 7, exhibit the union joint; *a*, are the lead pipes; *b*, is a brass ferrel with a shoulder, which slides over the lead pipe; and on the other side there is another barrel *c*, which slips over the lead pipe opposite; *d*, is a nut passing over *b*. After the ferrels *b* and *c*, are slidden over the lead pipes, their ends being turned up in a simicircular form, like the larger end of a trumpet; *e*, is a brass ring put between the ends of the lead pipe, and screwed tight together, and the nut *d*, being screwed up, makes the union pipe secure.

Figs. 7, are made of brass, and exhibit the means of forming an elbow or cross joint.

Casting the iron barrels over copper or brass tubes, is effected by first drawing a wrought iron tube over the copper or brass, then fill them up with sand or core loom, and put them into moulds instead of a core; by which means the melted iron will adhere to the copper or brass casing.

The specification concludes by saying—" Although we have described the most particular features of our invention, we beg leave to state that our claim consists—First, as respects the hydraulic machine, or rotatory process, the particular excentric form and construction of the cam *f*, and spring lever *i*, which produces the elastic pressure of the slides or pistons against the barrels as they revolve, and likewise the elastic or spring step *o*, and *p*, bearing against the revolving rollers; also the metallic packing *m*, and *n*, bearing against the sides of the barrel, which forms together a metallic piston. Secondly, the particular construction of the union joint, to connect lead pipes together without soldering; and thirdly, the mode of casting iron upon copper or brass, as described."—[*Inrolled September*, 1828.]

To RENE FLORENTINE JENAR, *of Bunhill Row, in the Parish of St. Luke, in the County of Middlesex, Gentleman, for his Invention of a new Method of filling up with Metal, or other suitable material, the Holes or Interstices in Wire Gauze, or other similar substances, which he denominates Metallic Linen.* [Sealed 4th July, 1827.]

THE proposed mode of filling up the interstices of wire gauze, so as to render it impervious to air or liquids, is by immersing the said gauze in melted metal, and causing that metal to adhere to the wire so as to close the aperture, and form a perfect plate.

In order to effect this object, it is to be observed that the gauze must be made of such metal or alloy as will not melt at so low a temperature as the metal in which it is to be immersed; and in performing the operation, great care must be taken that the wire gauze is perfectly cleansed from all impurities, before it is introduced into the melted metal.

The usual fluxes must be made use of in order to cause the metals to adhere. For instance, sal ammoniac must be employed, where tin is the metal by which the interstices are to be closed. If copper, then borax; and for any of the other metals, the same fluxes are commonly applied to the purpose of soldering or bronzing.

The operation is this. Suppose the gauze be made of iron wire, take a piece of it, about one foot square, and having cleansed and trimmed it in the ordinary way, make a hot metal bath, of two parts tin and one part lead, and fix to the gauze two pieces of iron as frames or handles, at each extremity. The operator then takes hold of the gauze at each end by tongs, and while another person skims aff the oxide from the surface of the metal, he plunges the gauze in the melted metal in a horizontal position, and then contiuues moving it gently backwards and forwards, for two or three minutes. We must then slide the ends of the gauze to and fro, out of the bath, in order that the metal might crystallize, and when the meshes or intesrtices of the gauze are all filled up, it may be withdrawn altogether, taking care that the motion is continued until the metal has set evenly.

The temperature to which the bath should be heated must depend upon the metal used. Its proper heat may be ascertained by occasionally dipping a piece of gauze into it, and observing when the crystallization appears sufficiently perfect to warrant the immersion of the article intended to be filled up by that metal.

Another mode of effecting the same object, is by means of moulds instead of immersion. Suppose it be requisite to fill up the interstices of a dish-cover of a hemispherical shape, to be made of wire-gauze. A mould is to be provided, of the exact shape of the dish-cover; such a mould as is usually employed for pressing wire-gauze into its form. The matrix of this mould is to be the bath containing the fused metal, the surface of which, being skimmed over to remove the oxide, a sheet of the wire gauze, properly cleaned, is to be laid over the matrix, and the counterpart of the mould forced in, so as to press the wire-gauze into the hemispherical form, the superfluous metal, of course, flowing over. In this situation it is to be kept until the metal is cold, and on being removed from the mould, it will be found that the interstices are closed, and that the cover is perfectly formed.

The Patentee also contemplates filling the interstices with potters earth. To effect this object, the earth or clay must be brought into a fluid state by mixing it with water, when the article being dipped into the liquid, it will adhere, and the interstices become closed. If one immersion is not sufficient, the same must be repeated until the interstices are perfectly closed; and when the clay has become dry, the article so treated may be baked in the usual manner.

Another mode of closing the gauze is by placing a thin sheet of soft metal upon the gauze, and pressing them together with great force, so that they may firmly adhere, and the effect produced after polishing the surfaces of the metal is very beautiful.

Paper or shavings may also be employed to fill up the interstices of the gauze by means of paste; or tortoise-shell or horn may be applied, it being first heated, to render it soft, and then pressed with very great force.

It is also proposed to fill the said interstices with glass; in doing which a sheet of wire gauze, prepared very smooth, is laid upon a plate or pane of glass, and these are put into a furnace together, and heated gradually, until the glass becomes soft: they are then laid upon a table or slab, and with a polishing tool the wire gauze is pressed into the glass. After which they may be annealed in a proper furnace in the ordinary way.

The Patentee concludes by saying, "I do not restrict myself to the modes hereinbefore described, of filling up the interstices of the gauze, for I know that there are many other ways of effecting the same object; though I have found those methods hereinbefore described to be the best which I have tried. But I claim, as a new invention, the filling up of the interstices of wire gauze or wire net, with the various substances hereinbefore described, so as to form solid plates, sheets, or surfaces, for the purpose of various manufactures."—[*Inrolled January*, 1828.]

To JOSEPH BLADES, *of Clapham, in the County of Surrey, Gentleman, in consequence of a communication made to him by certain Foreigners residing Abroad, for a new invented Improvement in the Water-proof Stiffening for Hats.* [Sealed 15th January, 1828.[

THE inproved stiffening of hats consists of gum-shell lac, dissolved in alkali instead of spirits of wine. This is to be applied to the hat-body, and the gum is afterwards hardened or set by diluted acid.

The mode of preparing the water-proof stiffening is by mixing eighteen pounds of gum-shell lac, with one pound and half of salts of tartar, and five gallons and half of water. These are to be put into a kettle, over a fire, and made to boil gradually, until the gum is dissolved, which will be, perhaps, in about an hour, stirring it as it melts. When it is perfectly dissolved it will boil up as clear as water, without any scum on the top, and when left to cool will have a thin crust on its surface, of a whitish cast, mixed with the dirt of the gum.

When this skin is taken off, the hat-body is to be dipped into the mixture in a cold state, so as to absorb as much as possible of it; or it may be applied with a brush or sponge. The hat-body, being thus stiffened, may stand to dry, or nearly so; and when it has been brushed, it must be immersed in diluted acid. About half a pint of vitriolic acid, mixed with five gallons of cold water, will answer the purpose.

The hat-body is to be soaked in this material for about five minutes, when the gum will become set.

If the hats are not to be napped immediately, they may be thrown into a reservoir of pure water, using them as wanted.

Should the hat-bodies have been made in vitriol, they must be soaked in hot water, to kill the acid, and dried before the water-proof material or stiffening is put on; and care must be taken that water is not dropped on the stiffened body, before it has been immersed in the acid.

In stiffening large quantities of hats, it will be necessary to add a little acid occasionally, to keep up the strength, which may be known by tasting, as the alkali in the stiffening material will, in some degree, neutralize the acid.

The novel feature claimed in this Patent, is dissolving the gum shell lac in alkali, instead of spirits, and setting or hardening it by immersion in diluted acid. The Patentee does not, however, confine himself to salts of tartar, but claims the use of any other alkaline material, which would answer the purpose of a solvent to the gum; and any other acid that would set the gum, or neutralize the alkali; the object being to stiffen hats, without the use of spirits or essential oils.—[*Inrolled July* 1825.]

To ROBERT MOIR, *of Underwood, Stirlingshire, in that part of the United Kingdom called Scotland, Distiller, in consequence of communications made to him by certain Foreigners residing abroad, and discoveries by himself, for certain improvements in the process of preparing and cooling Worts or Wash, from Vegetable Substances, for the production of Spirits.*—[Sealed July 18, 1827.]

THIS invention consists first, in preparing worts from grain or other vegetable substances, washed in the state in which it comes from the mill stones, which washing is to be performed in a vessel, without a drain or bottom. Secondly, in cooling worts or wash, for the purpose of fomentation, by the addition of water, at a low temperature.

The grain or other vegetable matter, with all the husk, as it comes from the mill stones, is put into a vessel with a close bottom, where it undergoes the operation of washing. After having cooled it down, it is then fomented with the husky matter mixed up in it, and when the operation is complete, it is sent to the still.

The cooling of the wort or wash, is performed by the addition of water, at a low temperature, immediately before the yeast is introduced; the quantity of water required, will be only so much as will reduce it to the proper temperature for fomentation, which is known by every practical brewer, and depends upon the density of the worts or wash.

By this method of operating, grain may be used in a state, which will yield a better quality of spirit, than can be obtained by the ordinary means; there will also be a great acceleration of the process, and the cost of utensils employed in cooling will be saved.

The Patentee says, "I do not claim the use of a vessel, without a drain or bottom generally; but I claim, as the said invention, first, the process hereinbefore described, of preparing the worts, (viz.) from grain or other the like vegetable substances put into a vessel, without a drain or bottom, with all the husky matter, just as it leaves the mill stones, and washed in that state in such vessel; and secondly, the process hereinbefore described of cooling worth or wash."—*Inrolled January*, 1828.

To ROBERT MORE, *of Underwood, Stirlingshire, in that part of the United Kingdom, called Scotland, Distiller, in consepuence of communications made to him by certain Foreigners, residing abroad, and discoveries by himself, for certain processes for rendering Distillery Refuse productive of Spirits.*—[Sealed July 18, 1827.]

THE subject of this patent is a mode of effecting a saving in the process of distillation, by mixing about one third of what is called spent or refuse wash, with the fresh wort, about to be subjected to the process of distillation. This refuse wash is to be mixed with the wort, just before the yeast is introduced, in preparing the fomentation.

The spent was as discharged from the still, is to be placed in a suitable vessel, where it must stand, until the thick or mucilaginous and husky matter has subsided to the bottom. The thinnest part of the liquor is then poured into a cooler, where it remains, until reduced to the temperature of the atmosphere, when the clearest part of the wash only should be drawn off.

The wash being thus prepared, and a suitable quantity of fresh wort cooled over to the proper temperature, they are mixed together, in the proportions of one third old wort, to two thirds new wort, the yeast is then added, and the fomentation goes on in the usual way.

The Patentee claims to be the inventor of using spent wash, in the way above described, for the purpose of assisting in the production of spirits.—[*Inrolled January* 1828.]

Polytechnic and Scientific Intelligence.

Filtration of Water.

THE public mind has been much agitated by the discussion of what is popularly called the "*water question*;" and many ingenious theories have been devised for its solution. But as yet little has been done towards an adjustment of these pretensions, and it seems likely that it will be left for the assembled wisdom of the country to arbitrate their claims, and adopt that arrangement which promises to be most extensively beneficial.

In the mean time it gives us pleasure to be able to present our readers with an account of a plan which has been recently submitted to the consideration of the water companies for filtering water on a scale adequate to the wants of the whole community; but, before entering on its description, it will be necessary to say a few words on the nature of water, and the possibility of effectually cleansing it from its impurities.

Water, as is well known, is the universal medium through which the mould is cleansed from its impurities; and, it would seem to argue a defect in the well-balanced design of the universe, if there had been no ready method of cleansing it from the foreign ingredients, which, are constantly mixing themselves with it, and rendering it unfit for the purposes of life. Had no provision been made to meet this exigency, the water of the globe, would ages ago have become feculent:—the dead fish, and the autumnal leaves of a single season would have poisoned nations. But we find that the all bountiful Creator has substituted water in such a way, that it taints and sweatens itself at the same time, and with equal facility. A shoal of sea sand absorbs the deleterious particles of a dead whale, and a granite bed, the refuse of the forest which caused it.

To enable us to understand it clearly, the simple beauty of these processes, the nature and properties of water should be borne in mind. Water is believed to be composed of minute spherical particles, freely moveable amongst each other, and individually of *exceeding hardness.* Its unconfined surface is perfectly level, and keeps at exactly the same height in vessels communicating with each other, that entering into its composition, disperses its particles, and converts it into steam, and its specific quantity is bulk for bulk, generally lighter than any solid matter.

A careful consideration of these facts, by throwing considerable light on the means employed by nature for clarifying water, proves the utter inadequacy of many of our artificial contrivances for that purpose, and demonstrates the means whereby an efficacious arrangement may be attained.

The *sphericity* of this particle of water, by occasioning interstices between them, accounts, in a very beautiful manner, for that ready absorption of extraneous matter which precedes saturation, and their *hard, impervious* nature seems wisely to prevent an inseparable mixture with foreign elements. Physical solubility appears, therefore, to be nothing more than a mechanical mixture of *little* SOLID *atoms*, and the possibility of perfect filtration is hence demonstrated. Mr. Kennedy, the gentleman whose plans we are about to describe, applied himself, in this view of the subject, to an examination of the means employed by nature for cleansing impure water, and to the discovery of an artificial adaptation of it for the supply of the metropolis. He observed that turbid water, in its passage through beds of sand, divested itself of all its alienal ingredients, and sprang to the surface of the earth in a state of pristine cleanliness: The inference was therefore obvious, that the sand had attracted to itself the vitiatory particles, and that the water had *ascended from* the corrupt matter, in obedience to superior pressure or capillary attraction. This remarkable property of water is taken frequent advantage of in our manufactures, but in none with more singular effect than by the dyer, who first saturates a tub of water with colouring matter, and then discharges it by immersing his fabric, which attracts to itself the colouring ingredients, and leaves the water in a state of comparative purity. Gin also, in like manner may be drawn from a glass of gin and *water*, by soaking bread in it. It seems, therefore, that *water invariably gives up its solution to the first bodies with which it may come in contact.* We are aware that this theory will be hotly opposed by those who wish to make a job out of the investigation, by putting the public to the expense of canals from distant places, where they presume that better water is to be found than in our immediate vicinity; but the bubble needs no burstings, as it certainly never can acquire sufficient consistency to float for a moment in the ;public atmosphere. " Good wine needs no bush," and we are, therefore, not a whit better pleased with the project, that the banks of this crystalline stream are to be ornamented by molehill mountains, Nashy villas, and mastic temples, which a few years' rain would suffice to wash into the ditch they acorn, and so down the throats of the unfortunate subscribers. Calculus and gravel would then rage as an epidemic. We are not, however, without hope, that truth will in this instance triumph over imposture, and that the cockneys may yet drink the same healthy water, that in days long since gave nerve to the brawny limbs of the Romans of ancient Londinum.

The public have been led into error on this question, in consequence of the smallness of the means hitherto offered by ingenious men for accomplishing this great purpose, and which have been so self-destructive, as to become useless after a few weeks operation. Something more than a four or ten gallon filtering machine is evidently wanted to clarify the Thames, and it gives us pleasure to be the first to onnounce, that Mr. Kennedy is likely to supply this very important desideratum, by means at once simple, cheap, and efficacious.

Mr. K. proposes to erect, in connectlon with the works of our several companies, a series of reservoirs, of sizes proportioned to the consumption, but to contain in all instances, a bed of pure sand of ten feet depth; but arranged in such a way as to be *equivalent to oue hundred feet.* Into these reservoirs, the water to be purified is to be delivered, and allowed to gravitate through *two-thirds* of the entire depth of sand, and to *spring* to its *original level* through the remainder. The novelty of this contrivance, consists chiefly in the arrangement of the sand, which as has been already observed, is so contrived as to make ten feet of sand equivalent to one hundred! and, which is made to occupy a chamber of such a form as to force the water through it, at *rates proportioned to its purity*, which is a great and manifest advantage; inasmuch as the water is ten times longer in contact with the purifying material in the first, or most impure part, than it is in the last and purest.

The intelligent reader will observe the great difference between this plan and those already before the public; in this, which may be called the natural filterer, the water passes through one hundred feet of filtering material, while in those of artificial structure, it passes through scarcely a tenth of the same number of inches. In the common filters, the water *gravitates* through the cleaner, which becomes more and more impure every hour of its use; but in Mr. K's. it springs *upwards* from the filter, leaving its filth behind, to be cleared away at convenience. By the former, a single household only can be supplied, by the latter the drought of a city may be satiated.

We have said enough, it is hoped, to attract the public attention to this truly national plan for supplying the metropolis and its satellites with wholesome water; and, trust also, that we have proved, that it can be done by the very simple process of filtration; and that too, in such perfection as to deprive it of the much talked of animal and vegetable matter; and, in proof of the exactness of our opinion, we beg to subjoin the testimonials of several of our first philosophers in its favour, who like us, have both tested and tasted with equal satisfaction.

Testimonials—Birkbeck,—1.
Thompson, —2.
Macline ——3.
Hemming——4.
Partington—5.

Luminons Phenomenon in the Heavens.

In the evening of the 29th of September last, about eight o'clock, a very extraordinary stream of light appeared, shooting up from the north western part of the horizon. It resembled the tail of an immense Comet, which many persons at first supposed it to be. Its breadth was about 4°, and it extended towards the zenith, to about 80° of altitude, with scarcely any undulations or variation in its brilliancy, for about an hour or more.

The steadiness of the light and its duration, contributed much to confirm the notion of a Comet's tail; and it was not a little remarkable, that it should appear to emanate from the zodiac, about the middle of the sign Libra, near where the Sun then was, below the horizon; for a Comet just emerging from the vicinity of the Sun, would have been first visible in that part of the Heavens, and two or three cloudy evenings, which immediately preceded the one which the phemonenon was seen, might have accounted for its sudden appearance.

Another circumstance of a remarkable character attendant upon this luminous phenomenon, was that the extremity of the stream of light lost itself in the *via lactea*, near the constellation Cgynus, which at that time appeared unusually brilliant, so that the stream appeared to extend completely across the Heavens, from one point of the horizon to the opposite.

This phenomenon can now only be considered as a meteorological appearance, an extraordinary configuration of Aurora Borealis, but which must have been of very considerable extent, as it was observed in various parts of the kingdom.

We copy the following observation on this subject, from the Literary Gazette, made by a Gentleman at Woolwich.

" About a quarter before nine o'clock, when the light of the eastern limb began to be diffused and exhibited by lambent coruscations; with the assistance of Mr. Marsh, the electrical kite was raised in the Artillery Barrack field; the wind blew briskly from about South-west, and 300 yards of wired string were let off the reel. Strong sparks were obtained by presenting the knuckle to the reel, and a jar was frequently charged to a considerable intensity; but nothing particular, as regarded the electricity of the atmosphere, during a quarter of an hour that the kite was afloat, was by any means observed. I had, from my first observing the celestial phenomenon, expected to have seen a dense cloud, (such as is generally observed to accompany the Aurora Borealis) in the horizon; but, until the arch had nearly reached the zenith, no such cloud was visible. About this time, however, the anticipated associate began to make its appearance, which, for awhile, could only be traced by the eye in the north part of the horizon. It soon became more dense, and better defined by a bright light round its upper edge; but no coruscations, although anxiously looked for, were ever observed to emanate from this part of the Aurora.

Whatever general relation terrestrial magnetism has to the Aurora Berealis, I think it may fairly be inferred, that this particular display strikingly manifested their connexion. The plane of the curve, during the whole of the time, was unquestionably nearly (perhaps exactly) at right angles to the magnetic meridian.

Notwithstanding the atmosphere, during the display of the Aurora, exhibited no unusual electrical phenomena, it certainly became more intensely charged during the following day than I have ever observed it in the whole of the past summer.

The kite was raised in the Artillery Barrack grounds, between twelve and one o'clock, and the same twine that was used the preceding night was let out. On presenting the knuckle to the insulated wire, I experienced a tremendous shock, which affected my shoulders and legs as if an immense battery of low intensity had been discharged from my hand to my feet. This unusual discharge suggested the proprtety of immediately quitting the string. The insulating part was therefore tied to a tree, and there left, the kite floating about 100 yards above the ground. Heavy clouds soon appeared to windward, but advantage was taken to lower the kite before they arrived over it. To prevent the effect of a discharge whilst running down the string, a loop was made at one end of a silk ribband, through which the string passed; the other end of the ribband being held in the hand. Notwithstanding this precaution, I received another blow much more formidable than the former. The discharge in this case passed over three quarters of a yard of silk ribband, from the kite string to my hand; and as the silken insulation at the tree was not so long, it is likely that a considerable quantity of fluid was discharged from the end of the twine over the insulation to the tree. This discharge happened when about 100 yards of the kite string had become horizontal betwixt my hand and the tree; and what rendered it more extraordinary, no perceptible cloud was near the kite at the time. The kite, however, was soon brought to the ground, without any other disagreeable effect. I never experienced any thing of the kind before, although I have had the kite afloat with the same twine, more than a hundred times this year, under almost every circumstance of weather, and at various times of the day. The kite-string has uniformly exhibited positive electricity in every experiment.

Protection against Damp, Rust, &c. By JOHN MURRAY, F. S. A., F. L. S., &c.

I find, that if linen or woollen cloth be immersed in water, saturated with *quick-lime and sulphate of soda*, and then carefully dried, delicate steel instruments folded up in it, even if themselves damp, are effectually preserved from rust or oxidation. The rust of iron is found to contain a carbonate of that metal, and the aqueous particles of "wet" and "damp" are, it is proved, decomposed by the contact of iron at all temperatures, and with increased effect at an elevated one; hence the formation of rust, or oxidation, &c. It is probable that the caustic lime not merely absorbs any minute quantity of carbonic acid present in the air, and by damp brought into more immediate contact with the iron or steel, but also absorbs the first portions of present damp, perhaps too caustic lime may even take up *oxygen.*

The efflorescent sulphate of soda does not attract humidity, but rather casts it off even its own water of crystallization.

It is evident that an envelope of cotton or woollen cloth, saturated as described, would not only be a protection against damp in the case of steel, plate, &c. but also of equal value for the preservation of deeds, &c. whether on paper or parchment.

Steel articles, &c. may be very well preserved, if buried in powdered quick-lime.

From a number of experiments I have made by suspending, by means of a silk, &c. thread, finely polished and magnetized steel bars in *lime water,* so as to float freely in this medium from the point of suspension, I have concluded that it points out an admirable method by which the magnetic virtue may be preserved for an indefinite period. A ring of iron, inclining to the "angle of no attraction" pointed out in Mr. Barlow's Researches, might surround the phial or little glass globe, and the cardinal points be engraved by a diamond on a circular line externally. Under these circumstances, poised in an uniform medium of unvarying density, no atmospheric mutations would disturb it, and the finely polished steel needle would be preserved even free from oxidation, the fatal antagonist to magnetism.

On the relative quantity of Steam condensed in vessels with bright metallic and blackened surfaces. By R. W. Fox, Esq., Vice-Precident of the Royal Geological Society of Cornwall.

Two cubical vessels of tin plate, of which the surface of one was bright, and that of the other covered with lamp-black, were connected with a steam boiler, by tubes so inclined towards the latter as to allow all water obtaining from condensation in the tubes to return to it. The vessels were of equal dimensions, four inches side, and the experiment was made in a close room, of which the temperature was 82°; that of the steam being at a mean of 215°. The water was withdrawn by cocks properly adjusted for the purpose; and at the expiration of seventy-two minutes, the bright vessel had afforded 5.7, and the blackened one 10.2 cubic inches. Now, supposing steam of this temperature to be 1600 times rarer than water, in twenty-fours the condensation from one foot of blackened surface would be 489600 cubic inches, or 1736 gallons of steam, and from an equal extent of bright metallic surface 273600 cubic inches, or 972 gallons. Hence the condensing energies of a blackened and polished metallic surface were to one another as 1736 is to 972. When the difference between the temperature of the heated body and that of the surrounding medium is greater, the effect will be proportionally augmented.

But when currents obtain it is probable that the effect will be increased in both; but that the ratio of this increase will be greater for the bright than for the blackened surface.—*Brewster's Journal.*

French Patents,

DELIVERED IN MAY, JUNE, AND JULY, 1828.

To Thomas MacCulloch and Brunelson, senior, of Tarrare, to dress all sorts of cotton, cambrics, &c. 10 years.

— Jerome Gerneys Chatelain, of Chaument, for a machine to sew. 5 years.

— Isidore Christoffle, of Paris, for a new process of manufacturing buttons of horn, &c. 10 years.

— James Francis Adams, of Paris, for a new method of binding books. 10 years.

— Parfait Modeste Carpentier, of Paris, for improvements to his chair-bed patent. 15 years.

— Victor Lemitayor, of Fecamp, for improvements of a drawing machine. 5 years.

— Antoine Christoffle fils, of Paris, for improvements to his patent for manufacturing buttons. 10 years.

— Strasguth and Kress, of Colmar, for a machine to split skins. 5 years.

— Samuel Morton, of London, for a process to extract diamonds from gold, silver, and other metals. 10 years.

— Jean Baptiste Lethcidier, of Bourdeaux, for a method to learn to write, he calls "triangulaire." 5 years.

— Julis Ferigire, of Paris, for a particular lamp, spout or nose. 5 years.

— Henry Pape, of Paris, for a new harmonical table to pianofortes. 10 years.

— Jean Baptiste Carran, senior, of Lyons, for manufacturing stockings, like coloured shawls, &c. 5 years.

— Hector Chateouneuf and Grandboulogne, of St. Jean, for a steam stove. 5 years.

— Parre Versepuy, of Rium, for a lithoique cement. 5 years.

— Stolz, of Paris, for a pumping machine of contrifugal power. 5 years.

— Francois Douaisses, of Paris, for manufacturing wooden buttons. 5 years.

— Emile Martin, of Fourchambault, for iron bedsteads. 5 years.

— John Collier, of Paris, for improvements to his patented weaving loom. 15 years.

— Elie Joel and Conte, of Paris, for a process of manufacturing sealing wax. 5 years.

— Onesiphore Pecquair, of Paris, for new machinery in applying steam to coaches, &c. 15 years.

— Gourgii Desroches, of Perrome, for a process to cure sour wines. 10 years.

To Gaspar Abrard fils, of Aix, for an apparatus in spinning silk, 5 years.

— Joseph Nicolas Perrin, of Paris, for a night lamp. 5 years.

— Aschermann and Perrin, of Paris, for a machine to shave skins. 10 years.

— Henry Joseph Pohlin, of Paris, for improvements to his patent in damping cloth. 10 years.

— Charles Oge Barbaroux, of Paris, for a panorama, he calls, " traveller." 5 years.

— Joseph Goulofret fils, of Versailles, for improvements in a machine for drawing cotton. 10 years.

— Francois Gabriel Lehoult, senior, for an improved drawing machine in manufacturing cotton twist. 5 years.

— Jacques Defontenay, of Paris, for improvements in manufacturing buttons, with divers materials, like silk buttons.— 5 years.

— Garcon-Malar, of Paris, for a mill with rollers. 15 years.

— Jean Louis Tellier, of Amiens, for a litter-carriage. 5 years.

— Thomas Revillon, of Macon, for improvements on his balance press. 15 years.

— Jean Batiste Vallier, of St. Denis, for a mechanical loom. 10 years.

— Narcisse Decrotoy, of Amiens, for a machine to improve carriages, he calls " perpetual axle tree." 5 years.

— Jean Batiste Coeffet, of Charmont, for a wind instrument, he calls " ophimonoclude." 5 years.

— Louis Jung, of Paris, for a machine to cut screw-nuts, washers, &c. 5 years.

— Charles Louis Durand, of Paris, for an improved cotton twist, employed in weaving bobbin nets. 15 years.

— Jappy frires, of Baucourt, for a double cutting press. 15 years.

— Quetresoltz de Marolles, of Versailles, for a corn batting machine. 5 years.

— Pierre Isider Rouen, of Paris, for a new lamp nose. 5 years.

— Charles Francois Mullere, of Paris, for improvements in his pulpit for drawing. 5 years.

— Pierre Louis Charbomeaux, of Versailles, for a new system of coaches. 10 years.

— William Keen, of London, for improvements in steam engines. 15 years.

— Pierre Fusz, of Isming, for improvements of his machine, he calls " lever carriage lockage." 10 years.

— Pierre August Gluzel, of Paris, for a new fur hat. 5 years.

— Barier, of Lavoult, for a machine, " pneumatic hydraulic." 15 years.

— De Barres du Molard, of Paris, for a system of bridges. 15 years.

To Pierre Ramon, junior, of Bourdeaux, for a distilling apparatus: 5 years.

— Simon Allcau, of St. Jean d'Angely, for improvements in the distilling apparatus. 10 years.

— Jean Pierre Pragez, of Aix, for a distilling apparatus. 10 years.

— Dufour, of Paris, for an elastic spring to put into hats.— 5 years.

— Rodolphi Walz, of Leipsic, for an apparatus of shower baths. 5 years.

— Thomas Preston, of Dichy, for improvements in manufacturing sheet or rolled lead. 10 years.

— Naverre, of Paris, for a machine to make the paste for bread and biscuits. 10 years.

— Antoine Perpigna, of Paris, for a new evaporating apparatus. 10 years.

— Rever, of Conteville, for a method of a gas-bottle. 5 years.

— Theodore Parquin, of Paris, for a process to manufacture kettles, called " Captieres du Levant." 5 years.

— Labarthe, of Paris, for a new lamp nose. 5 years.

— Liebant and Cie, of Paris, for an apparatus to bleach sugar. 5 years.

— Jean Joseph Giraud, of Bagnols, for a machine to spin the silk from the cocons. 5 years.

— Auguste Moineau, of Paris, for an indestructible power applicable to clocks. 15 years.

— Louis Achille Moru, of Paris, for a new system of hydraulic lamp. 5 years.

— Antoine Galy-Garalat, of Versailles, for an acrostatic lamp. 10 years.

— Felix Haize, of Paris, for manufacturing horse-shoes. 10 years.

— Jean P. Clave, of Haut-maneo, for wind bellows. 5 years.

— Francois Xavier Odenz, of Courtalin, for a machine to manufacture paper. 5 years.

— Jean Pierre Peyras, of Carmaret, for a furnace to spin the silk from the cocons. 5 years.

— John Nicholson, of Paris, for a machine to rule paper. 10 years.

— Pierre Jacques Debezis, of Paris, for a system of elastic canopies. 10 years.

— Thomas Hall, of Amiens, for a new method of figuring cotton, velvet, and other woollen stuffs, for furniture 5 years.

— Andre Thomas Michel, of Cavaillon, for an economical furnace to heat silk looms. 5 years.

— Bruneaux and Demormand, of Rethel, for a system of moveable combs to comb wool. 5 years.

To Cesteon, of Spain, for a hand-mill. 10 years.

— Hector Chateauneuf, of St. Jean, in Royane, for a felling machine, applicable to the manufacturing of hats. 5 years.

— Lefaucheux, of Paris, for improvements in the system of "Pauly's guns." 10 years.

— Etienne, Le Blanc, of Paris, for buttons, he calls, "a la Diane." 5 years.

— Roux, of Paris, for a surety lock. 5 years.

— Halette, fils, of Arras, for a new apparatus to manufacture sugar from beet-root. 10 years.

— Prosper Meynier, of Lyons, for a loom to weave several ribbons at one time. 10 years.

— Bon-Pierre Dumoutier, of Pantin, for a process to burn plaster with coal. 5 years.

— St. Croix-Melay, of Paris, for moveable arches. 15 years.

— Naudot and Co. of Paris, for a process to manufacture bricks, tiles, &c. by machinery. 15 years.

— Louis Alexander Darthe, of Paris, for sundry apparatus to heat and bake economically. 15 years.

— Louis Charles Francois Ledues, of Clermontferrand, for the application of the "Domite." 10 years.

— Jean Moullier, of Surgeres, for new boilers to distil brandy. 5 years.

— Lemoine, of Paris, for wind cushions. 5 years.

— Delebourse, of Paris, for improvements on the "Pauly guns." 5 years.

— Cyprian Prosper Brard, for a process to manufacture paper with wood. 5 years.

— Bunten, of Paris, for a new barometer. 5 years.

— Bricaille, of Paris, for a method to learn to read in a short time. 5 years.

— Witz, fils, and Co. of Cernay, for a new process to spin cotton. 10 years.

— Petit Pierre, of Paris, for a new method to cast music. 15 years.

— Julian Dumont, of Paris, for improvements in his sugar clarifying apparatus. 10 years.

— Bernard Bonnet, of Nantes, for manufacturing iron "casses," 10 years.

— Jean Kettenhovin, of Paris, for metallic sandals. 10 years.

— Jean Francois Lethardier, of Lons Le Saulnier, for improvements in his machinery to manufacture wire nails. 10 years.

— Prosson de Volvie, of Paris, for a process to render spongy stones solid. 15 years.

— George Bavier, of Paris, for a particular japan varnish.— 5 years.

To Gaspar Joseph Christian, of Paris, for a new system of spinning silk. 15 years.

— Charles Louis Derosne, of Paris, for sundry new process in manufacturing sugar. 15 years.

— Aime Bourbon, of Paris, for a system of hydraulic machinery, applicable to navigation. 15 years.

— Jean Escossier, of Bourdeaux, for a hydraulic machine.—5 years.

— John Nicholson, of Paris, for a cloth shearing machine.—5 years.

— Dillouce, of Paris, for a new slide pencil. 10 years.

— Francois Paulini Fournier, of Paris, for an apparatus, she calls "somametres," in manufacturing of stays. 5 years.

— Jean Louis Foucault, of Paris, for a new system of iron carriage wheels. 5 years.

— Bernier-Duchaussois, of Paris, for a three-wheel carriage, he calls "tricycles." 15 years.

New Patents Sealed in 1828.

To Peter Rigby Wason, Esq. of the Middle Temple, Barrister at Law, for his having invented a certain improvement in the article commonly called stick sealing wax.—25th September, 6 months.

To James Neville, of New Walk Shad Thames, in the County of Surrey, Engineer, for his having invented an improved machine or apparatus, for obtaining mechanical power from falls and running streams of water.—25th September, 6 months.

To Thomas Fowler, of Great Torrington, in the County of Devon, Stationer, for certain improvements in, or for raising and circulating hot water, hot oils, and other hot fluids for domestic and other purposes.—2d October, 6 months.

To John Brunton, of West Bromwick, in the County of Stafford, Engineer, for improvements in the apparatus for manufacturing coal gas and coke, and also improvements in the method of arranging such apparatus.—2d October, 6 months.

To David Napier, of Warren Street, Fitzroy Square, in the County of Middlesex, Engineer, for certain improvements in machinery applicable to letter press printing.—2d October, 2 months.

To Thomas Tippett, of Gwennap, in the County of Cornwall, Engineer, for certain improvements in the construction and mode of working engines with steam and air, and in the boiler or generator of steam, and in the application of such improved engines to a new method of propelling of vessels and other floating bodies.—9th October, 2 months.

To Samuel Lawson and Mark Walker, of Leeds, in the County of York, Machine Makers and Flax Spinners, for having invented improvements in machinery for preparing and dressing hemp, flax, silk, and other fibrous substances.—9th October, 6 months.

To Henry Duxbury, of Pomeroy Street, Kent Road, in the County of Surrey, Gentleman, for his having invented a new machine for splitting hide and skins.—9th October, 6 months.

To Edward Hancorne, of Skinner Street, in the City of London, Nail Manufacturer, in consequence of a communication made to him by a foreigner residing abroad, for an invention for certain improvements in making nails.—16th October, 6 months.

Meteorological Journal kept at the London Institution.

DATE.	HOUR.	BAROM.	Thermometer.	
			IN.	OUT.
SEPT.				
18	9	30·16	58	57·2
	3	30·00	59	58·0
19	9	30·06	60	61·5
	3	30.17	60	60·4
20	9	30·05	59	59·2
	3	29·98	58	59·0
22	9	30·10	60	61·0
	3	30·00	59	60·0
23	9	30·05	61	62·5
	3	29·97	62	66·0
24	9	29·96	63	65·2
	3	29·94	63	64·0
25	9	29·92	62	63·2
	3	30·10	64	65·5
26	9	30·20	70	68·0
	3	38·05	71	73·2
27	9	29·90	69	67·0
	3	29·68	75	78·5
29	9	29·60	72	56·0
	3	29·64	72	60·2
30	9	29·62	71	63.3
	3	29·62	70	60·5
OCT. 1.	9	29·60	68	59·7
	3	29·65	69	59·2
2	9	29·63	65	55.7
	3	29·68	64	58·0
3	9	29·70	64	58·0
	3	29·72	66	59.5
4	9	29·70	60	58·0
	3	29·73	59	64·0
6	9	29·76	56	57·2
	3	29·80	59	63·1
7	9	29·80	57	54·3
	3	29·75	55	56·7
8	9	29·80	57	55·0
	3	29·65	58	59·9
9	9	29·35	59	56·2
	3	29·30	58	57·5
10	9	29·90	57	52·2
	3	29·95	51	58·0
11	9	30·02	57	57·2
	3	30·05	57	59·1
13	9	30·15	55	52·4
	3	30.22	58	60·5
14	9	30·30	56	52·1
	3	30·48	60	65·4
15	9	30·48	58	66·7
	3	30·48	58	59·7
16	9	30·24	56	50·2
	3	30·20	57	53.5
	9	30·15	58	52·5
	3	30·09	59	53·4

CELESTIAL PHENOMENA, FOR NOVEMBER 1828.

D.	H.	M.	S.	
1	0	0	0	☉ before the Clock 16' 16"
1	4	0	0	♀ in conj. with β in Virgo.
2	0	0	0	♀ Stationary.
2	23	0	0	☾ in conj. with ν in Leo.
5	0	0	0	☉ before the Clock 16' 14"
6	7	0	0	☾ in conj. with γ in Vergo.
7	3	4	0	Ecliptic conj.or ● new moon
7	16	0	0	☽ in conj. with 4 ζ in Libra
7	23	0	0	♀ in conj. with η in Virgo.
8	1	0	0	☽ in conj. with ϑ in Libra.
10	4	0	0	☿ in conj. with κ in Libra.
10	0	0	0	☉ before the Clock 15' 52"
12	15	0	0	☽ in conj. with β in Capri.
13	0	0	0	♀ in conj. with γ in Virgo.
14	1	48	0	☽ in ▭ first quarter.
14	17	0	0	☽ in conj. with δ in Aquarius
14	17	0	0	♂ in conj. with γ in Capri.
15	0	0	0	☉ before the Clock 15' 9"
15	0	0	0	♄ Stationery.
17	8	0	0	♂ in conj. with δ in Capri.
17	20	0	0	☽ in conj. with ε in Pisces.
17	22	0	0	♃ in conj. with π in Libra.
18	1	0	0	☽ in conj. with ζ in Pisces.
18	15	0	0	☽ in conj. with ο in Pisces.
19	12	0	0	♀ in conj. with ϑ in Virgo.
20	0	0	0	☉ before the Clock 14' 6"
21	2	40	0	Ecliptic opposition, or ○ Full Moon.
21	12	0	0	☾ in conj. with 1 δ in Taurus
21	13	0	0	☾ in conj. with 2 δ in Taurus
21	18	55	0	☉ enters Sagittarius.
23	0	0	0	☿ Stationary.
25	0	0	0	☉ before the Clock 12' 42"
26	19	0	0	☾ in conj. with 1 α in Cancer
26	21	0	0	☾ in conj. with 2 α in Cancer
27	14	0	0	☾ in conj. with ξ in Leo.
27	19	0	0	☾ in conj. with ο in Leo.
28	5	0	6	☾ in conj. with π in Leo.
29	1	44	0	☾ in □ or last quarter
30	0	0	0	☉ before the Clock 11'
30	7	0	0	♃ in conj. with λ in Libra.
30	8	0	0	☾ in conj. with in υ Leo.

☽ The Waxing Moon.—☾ The Waning Moon.

Rotherhithe. J. LEWTHWAITE.

METEOROLOGICAL JOURNAL, FOR SEPTEMBER AND OCTOBER 1828.

1828.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low.	High.	Low.	
Sept.					
26	73	47	29,76	29,75	,025
27	58	50	29,82	29,81	,1
28	62	40	29,76	29,72	,425
29	66	51	29,57	29,56	,475
30	63	43	29,74	29,60	
Oct.					
1	58	46	29,60	29,56	,1
2	57	42	29,84	29,75	
3	58	37	29,89	29,76	
4	62	39	29,63	29,54	,2
5	62	40	29,56	29,47	,05
6	60	50	29,43	29,35	,55
7	60	45	29,56	29,50	
8	58	47	29,63	29,46	,025
9	58	45	30,06	29,86	
10	60	40	30,10	30,08	
Oct.					
11	61	44	30,26	30,19	
12	64	44	30,32	30,31	
13	62	40	30,30	Stat.	
14	58	47	30,30	Stat.	
15	57	41	30,30	30,26	
16	57	45	30,26	30,25	
17	59	46	30,11	30,10	
18	58	35	30,21	30,18	
19	51	31	30,16	30,13	
20	55	29	30,06	30,05	
21	57	34	30,05	Stat.	
22	65	42	29,89	29,83	
23	56	49	29,80	29,67	,15
24	50	30	30,10	30,00	
25	52	33	30,21	30,10	

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37' 32" N. Long. 3' 51" W. of Greenwich.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. IX.

[SECOND SERIES.]

Original Communications.

ART. VII.—ON THE LAWS RELATIVE TO PATENTS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—The general sentiments expressed by your correspondent, Mr. De Jongh, in his able exposition of the evils and absurdities of the entire system of Patents under the Great Seal granted for Inventions, are, I apprehend, in such accordance with the views of the intellectual portion of the community, and with the FEELINGS of the operative classes, that it is a matter of equal regret and surprise, that the genius and inventive talent of the nation should have so long remained without legislative protection.

It is with deference to the experience of Mr. De Jongh, I take the liberty of submitting, that the practical amelioration which he proposes, although in most respects posal upon the feelings and acknowledged rights of individuals. *Would he like to form an instance of rejected application?* My views are altogether for giving an UNLIMITED PROTECTION (as to its efficacy) to *every bona fide* new discovery, which any man may think worth the prosecuting. Almost every invention must be of *some* utility; it will lend its assistance, however small, to the general improvement of some one art or manufacture. Upon what principle of justice then should a censorship be established, which would in any degree repress the energies of the intellect? energies employed in pursuits, that can not by possibility injure society. A censorship of the press would be a mild and beautiful feature in our free constitution, (for the extravagancies of the press may do mischief, and the motives of writers are amenable to the jurisdiction of the commonwealth,) compared to the anomaly of the establishment of a tribunal, empowered to take cognizance of and interfere with a free man's own estimation of what his inventive talent, united to his personal exertions, means, and opportunities may effect.

I submit the foregoing observations with great deference to the matured opinions of others. Although I have the misfortune to differ from your able correspondent, as to the principle upon which a separate court for the adjudication of scientific matters should be established, I may have credit for the motives which direct my attention more particularly to the first point that should engage it, viz. the legal power which may be entrusted to such a court.

I am, Gentlemen,
Your obedient Servant,
VINDICATOR.

ART. VIII.—ON THE LAWS RELATIVE TO PATENTS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—The question of the imperfect and uncertain state of the Patent Laws has been very properly raised in your valuable publication, and has been discussed with propriety and ability. The paper by Mr. De Jongh does credit to his acquaintance with the subject, and it is a "consummation devoutly to be wished," that it may be useful to the Public, by attracting the attention of those whose station and influence may enable them to propose such alterations in the laws affecting Patents as may place this important species of property on a fixed and permanent foundation.

Of all property to which the statute laws of this country give protection and security, it is a fact that Patent property is the least favoured. An author is secure in the possession of his copyright in perpetuity, and may assign, for valuable considerations, his interest in the work he has originated; and his assignees have the same rights as himself. The discoverers of peculiar medicinal compounds, commonly called *quack medicines*, have the same privilege and security, the property in which descends to their heirs, successors, and assigns; but the Patentee of a valuable invention, by which the Public are most essentially benefitted, the boundaries of science, the arts, and manufactures, extended, and improved, and from which wealth may flow to the country at large, has his exclusive property in the discovery or invention limited to the short term of *fourteen years*, which, as the law now stands, is the utmost extent of the royal grant; and during this short term, he must contrive to get himself remunerated for years, perhaps, of toil and labour, attended with ruinous expenses: and Patent rights frequently expire before the invention is brought to perfection, or before its merits are fairly known, and duly appreciated.

Unjust, however, as this limitation may appear, and injurious in its consequences as it has often been, (for instance, in the case of Bolton and Watt, who, by great perseverance, and the powerful assistance of friends, at an immense cost obtained an extension of their Patent right by Act of Parliament,) yet it is a much less evil than the precarious tenure by which a Patentee now holds his property.

That the existing statutes are *vague* and *uncertain*, and of *various* interpretation, is a fact that cannot be denied, and frequently leads to expensive law-suits, and sometimes to ruinous results in reference to the parties interested.

The rigid investigation to which the title and specification are subjected, the literal construction of the language, and the technical description, render it difficult for any Patent to stand before a well-directed attack, and more especially under interpretations that are dependant on the uncertain impressions of the court and jury.

The statute of 21 James I. for restraining monopolies, appears to be the foundation upon which the whole of the decisions on the laws of Patents appear to rest; and we may refer to a few of the opinions founded thereon, in proof of our assertion of the uncertain and insecure foundation on which Patent property at present depends.

Lord Kenyon says, (in Hornblower *v.* Boulton,) "The principal objection made to the patent by the plaintiffs in error is, that it is a patent for a philosophical principle only, neither organized or capable of being organized; and if the objection were well founded in fact, it would be decisive, but I do not think so. By comparing the patent and the manufacture, it evidently appears that the

Patentee claims a monopoly for an engine or machine composed of material parts, which are to produce the effect described; and that the mode of producing this is so described as to enable mechanics to produce it. This is something made by the hands of man, and the Patent is good."

Lord Ellenborough (in Huddart *v.* Grimshaw) states, "There are common elementary materials to work with in machinery, but it is the adoption of those materials to the execution of any particular purpose that constitutes the invention."

Mr. Justice Heath (in Boulton *v.* Bull) says, "The grant of a method is not good, because uncertain; the specification of a method, or of the application, is equally so."

Mr. Justice Buller (in the same cause) observes, "A method or mode of doing a thing are the same. A patent cannot be supported for a method only, without having carried it into effect, and produced some *new substance.*"

The former of these cases enjoins, that a description of the mode or method by which the machine is to be made and constructed, and the operation performed is essential to a good Patent. The second holds the same doctrine, that the common elementary materials of machinery may be adapted and arranged by method or mode, so as to produce a new invention. In both these cases a full and clear description of the method and mode by which the machine produced is laid as the foundation of a good Patent. The latter opinions appear to go upon the conclusion that a specification for a method is not good; that the claim must be for the substance produced, which is at variance with the former, as they go upon the full and clear description of the method of arranging a machine as essential to the goodness of the claim.

Lord Ellenborough holds, (in the case of Harman *v.* Playne,) that a patent for improvements on a former machine was good, although the specification described the whole machine *without distinguishing the improvements* from the parts of the *old machine* already known; and a verdict goes for the plaintiff. But in the case of Bovill *v.* Moore, Sir Vicary Gibbs holds, that although an invention be new, and beneficial to the public, yet if the plaintiff has in his specification asserted to himself a larger extent of invention than belongs to him, the specification will be bad. If there existed, at the time of taking out the Patent, engines of which the subject of the Patent was only an improvement, the Patent ought to have been for the improvement, and not for the entire machine.—Verdict for the defendant.

This discrepancy of opinion proceeding from the highest authority, is sufficient to show cause why an alteration should take place, and that the laws affecting Patents should be revised, their import defined and fixed, their design and intention clearly expressed and adapted to the circumstances of the times and the improved state of scientific and mechanical invention. The labourer is worthy of his hire, and the inventor or discoverer of a useful machine, manufacture, method or principle, ought to have a reward, suitable and proportioned to the merits of his discovery or improvements, and the property in inventions of this nature when once taken, ought to be made secure and be permanently protected for the time of the Royal Grant, be it longer or shorter, so that investments in Patents shall be made to assume a tangible character.

The proceeding by *scire facias* and by *action* for *infringement*, are capable of much improvement, and a revision of statutes on which they are founded should take places forthwith; and I fully agree with Mr. De Jongh, that an entire new court ought to be established, to take cognizance and management of all matters regarding Patents.

A Board of Commissioners might be appointed by the Crown, and they should consist of gentlemen well acquainted with mechanical science generally, and of the arts and manufactures of the country. Such men would be capable of discriminating the merits and practical application of inventions submitted to their inspection, and would be best able to execute with effect, such regulations as may appear best calculated to promote the ends of justice, with a due regard to the several interests, both public and private.

Without attempting to state what the precise alterations in the existing Laws ought to be, I would suggest that when applications are made for Patents, a pretty full description of the intention of the Patentee should be stated, and the Commissioners ought to have the power to refuse a Patent, in the event of their not seeing anything new or useful in the invention. That to prevent favour or partiality, the applications should be sealed and delivered without signature; but should be numbered or marked in such a way, that the Commissioners shall not know from whence they came, or to whom they belong.

Some improvements are brought out with little trouble and expense, an accidental hint or thought may be applied to some useful purpose; others are perfected only by much toil and labour, and at a great expense, both in time and money. The Commissioners ought to have the power to limit the Royal Grant to not less than 10, or more than 30 years; so that the period of remuneration shall bear some proportion to the cost of the speculation.

That amendments and additions to the specification ought to be permitted during the first eighteen months or two years after the date of the Patent, and that such improvements should be made part of the original grant, and expire with the Patent.

That the fees should be greatly reduced, and the whole expense of taking a Patent limited to £.50. That in cases of Infringement, the Commissioners ought to be first applied to, and such arrangements attempted as they may think the justice of the case shall require; an appeal, however, may be allowed to a higher court, but it is desirable to effect the settlement of questions of this nature without expensive litigation.

In any regulations that are proposed, the utmost attention should be paid to the terms in which such regulations are expressed. The statutes ought to be cleared from all obscurities, as to the term *principle*, and the *organization* of *principle* or *method*, and the application of *method*, and sundry other *ingenious fictions*, which, however useful to counsel, as a medium to display his tact for making distinctions without difference, serve only to involve in obscurity the truth and justice of a case.

This subject is capable of much expansion and observations in detail, but I will at present leave it to your numerous correspondents, who will doubtless avail themselves of the opportunity you afford, to throw their lights on so important a subject.

I am, Gentlemen,
Your most obedient Servant,
J. RAYNER.

18th Nov. 1828.
King Square, Goswell Road.

ART. IX.—ON THE INVENTION OF MONEY BY THE ANCIENTS AND ITS HISTORY. BY B. COOK, ESQ.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—When you favoured me by the insertion (in your interesting Journal of Arts and Sciences for September) of my third Letter on the Invention of Money, I did intend, on the following month, to have concluded the subject, expecting that I could, in a very cursory manner, have proved that the Scythians were the first inventors of money, and then shown how this invention was introduced among other nations. But in pursuing this enquiry, I found myself incapable of describing a subject of such extent, in so small a compass as I first expected; and, indeed, I have experienced the greatest difficulty in being able to select and condense, as I have done, such a vast mass of history, which exhibited, in a degree, the history of man—his wants—his religion—and his progress in science and the arts.

In the earliest periods of time, we find, upon the coins of India and Persia, the figures of the bull and the lion; both of which were emblems of the sun, under two different aspects. One marked the time when it had disappeared from the heavens, and the earth was left in darkness; the other, when it was glowing in all its splendour, enlightening the world, the effulgent God of Day; and these monies, with such impressions on them, are found all over these two vast countries. Half of the sun's disc only is represented upon the backs of these animals, as representatives and emblems of the Deity that divided this luminary of day between them.

But I have, hitherto, said but little of the method of constructing their money. Now the most ancient money struck in Greece is easily known, from the method used in making it, because it has *no reverse* ; it appears, they found a difficulty in fixing the coin firmly in the die to receive the stroke of the hammer ; to effect this, they left upon the reverse several elevations, which entered into the plate or matrix, to prevent it from slipping. These points or elevations were numerous in the first monies, but in time, this rude method was exchanged for a surface, a little convex, which served to hold the coin, while the obverse was struck upon it. Upon coins now existing of Syracuse and India, this method is evident.

It appears, that the first Greek monies which had any inscription on the reverse, were cut in after the coin had been struck. The obverse was struck first, and then the coin was put in another die, and struck again, with a reverse; and this method appears to have been generally adopted by the people of Japan, as well as Greece.

Some of the first medals of Greece had, for a reverse, the head of Apollo, with his lyre; thus upon the medals of Crete, the head of Apollo appears, who was one of the deities worshipped there; and because Minos pretended to be descended from Jupiter, he was an object of the highest adoration. Idomeneus, who fought at the Trojan war, also attributed his birth to Apollo, the God of Day; the eagle, also, is found on the Cretan coins.

I would here observe, that a great quantity of coins and medals of Athens, and other cities, were square ; and indeed, all over Asia and Africa, there circulated not only square money, but octagon money. There also existed in France, in the time of the Emperor Honorius, a square money, made of red copper, upon the reverse of which was struck the figure of the goddess *Moneta,* with the legend *Exacium Solidi,* weighing about four pennyweights; the form of this money was like the money of Athens.

Upon the money of Thrace we find the head of Apollo, and on the reverse, a griffin; also on some of their medals is represented Jupiter, with an eagle on his hand, and a sceptre; on the medals of Macedonia is represented a horse; upon the medals of Corinth, the face of Minerva is represented, and on the reverse, *the Pegasus*—because she tamed the horse, before she gave it to Bellerophon.

The medals of the island of Cos, the birth place of Appelles and Hippocrates, had the head of Hercules, and on the reverse, the figure of a crab; and, indeed, it would lead me to a much greater length of time, and would tire your readers, were I to describe all the different coins and medals of the different cities of Greece, as each city struck different medals, either emblematical of the deity they worshipped, or corresponding with some interesting event belonging to that city.

There was struck a money of a parallelogram shape, at Paestum, with a Latin inscription, which proves the time it was made; this ancient Greek city was forced to receive a Roman colony, 465 years after the foundation of Rome, and 289 years before Christ; these Latin medals could not have been struck before this period, which was more than 40 years after the death of Alexander. The square money is never found among the Roman coins, because the spirit that called into existence science and arts at Rome, appears under a different shape to that sublime spirit that gave existence to the everlasting inventions of Greece. If, then, any coins of this shape are found with a Roman legend on them, it is certain they were struck in Greece, and after the time I have named.

I think, from my former remarks, it must appear clearly, that the Scythians were the first inventors of money; and after them, Erichthonius, Ithonus and Janus, coined money, long before the Trojan war. If we seek for authority from

Plutarch, he says, that Theseus struck the figure of the bull upon the Athenian money, either in honour of his having conquered the bull of Marathon, or, what is more probable, as an emblem of the deity worshipped at Athens; at all events, money, with this figure upon it, was used in Athens before the war of Troy, for his successor, *Mènesthée*, commanded the Athenians at that celebrated siege. It was on account of the figure of a bull being struck upon this money, that it was called by the name of this animal.

Upon the medals of *Pandosia* (a city of Greece, now destroyed) is the same impression, which was famous in history, for the defeat and death of Alexander King of Epirus, who was killed near to its walls, in the same year that the foundation of Alexandria in Egypt was laid. Now, two of the sons of Theseus fought under Agamemnon, at the siege of Troy, and leading there the Athenian youth—a city of the greatest influence among the other states—it is very likely that the money of their father and others, as well as of other states, which had the same impression, was the money then used by the Greeks, both in gold, silver, and brass; for we find that Homer, in speaking of the arms of *Glaucus*, exchanged for those of Diomede, says, that the golden arms of Glaucus were valued at a hundred oxen or bulls; and those of brass, of Diomede, were only valued at nine oxen. *Iliad, l.* 6, *v.* 235.

It is very certain it could not be animals that were exchanged as money, but money called by this name; so that in 2,000 years hence, when the money of this country is described as *sovereigns*, it will not be supposed that sovereigns, mighty men, kings, were in such plenty, as to be used in making exchanges for things to supply our wants, necessities, or luxuries.

Janus changed the form of the money he introduced into Italy, upon which he struck figures; and I am inclined to think, that his first coins were not only round money, but tessera, or money with wings attached to it. It was about the time of Servius Tullius, that the coins of Rome began to take a different figure; the first coins were cast in moulds, with the figures on them very much raised, and rude, and after being made, were adjusted to a certain weight, to correct the errors of casting. These first monies were chiefly of lead; but Numa began to make money of copper, and introduced other designs on it, as all the former coins had only the double head of Janus on one side, with a ship or prow of a vessel on the other. But the coins of Imperial Rome will require much more space than this letter will allow me. I shall, therefore, not enter upon them now, as I have hitherto been only endeavouring to trace the invention of money in the darkest ages of the world, and that very imperfectly, having so little light to guide me in my researches. As I approach nearer the latter times, I hope to give more interest to my subject.

I have endeavoured to show, that most of the earliest coins were struck with some figure representing the power and attributes of the deity they worshipped. Thus, the bull was the emblem of life—of that great animating power that gave life to all things. I have not thought right to name a vast number of other figures struck upon coins, which in this age would be considered indecent, but were not so in those days of darkness, superstition, and error.

There was another money, which had struck on it the figure of the serpent, and which I must not pass over. This reptile was frequently engraved upon the medals of Greece, and was emblematical throughout Asia, and almost all over the world, of the being that gives life. Thus we see exhibited in a *bas-relief*, in the Pagoda of Elephanta, a mystical figure, composed of both sexes, holding in its hand the serpent, supported by the head of a bull. The serpent was also an object of worship in almost all parts of the world *. The middle of the chapel, consecrated by the inhabitants of Japan to the Supreme Creator, is occupied by a vast bason filled with water; a great tortoise of bronze is placed in it, and supports a tree of the same metal, upon the summit of which is elevated the figure of their deity, painted black, because they suppose the creation took place during the night. The tree represents life, and is for this reason embraced by an enormous brass serpent, whose body is supported by four symbolical figures. This worship of the serpent is found on coins of almost all the eastern nations.

It is also to be seen upon many of the medals of Greece, especially those struck by the founders of Colonies. It is upon the medals of the first king of Attica, *Draco*,—upon those of *Cecrops*, the founder of Athens, and these kings are represented with the legs of a serpent. The worship of the serpent joined with the bull, the emblem of supreme power, has been found almost all over Europe. The Druidical temple of Stonehenge, on Salisbury Plain, was a Scythian temple, and dedicated to the worship of the serpent.

These temples, of which many ruins remain to the present time, were generally of an oboliscal form, and composed of immense stones; they were always open to the sky, to indicate that the great Spirit that animated all things could not be confined in buildings raised by puny mortals. The upper part, or sanctuary, was terminated with the figure of an immense serpent.

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* Query; can the serpent here alluded to have any reference to a tradition of the means by which evil was introduced into the world, as recorded by Moses. It has been the practice of many of the benighted nations of the earth to worship the evil spirit, as well as the good. EDITOR.

On some medals of *Commodus*, the Supreme Deity is represented under the form of a bull, as indicative of his supreme power. On the reverse of some of the medals of Marcus Aurelius are seen the bull and serpent. On the medals of Persia, and in the works of Zoroaster, this worship was practised. He represents God under the figure of the serpent, and describes him "as the Master of all things—exempt from death—eternal in his duration—without beginning, and without parts."

In order to show why we find so many medals with the figure of the serpent on them, I must be permitted to digress a little, by noticing the worship of the serpent. Upon the temple of Belus at Babylon, according to *Berosus*, was a colossal figure, representing this reptile, with a bull, as the Power that had created all things. Babylon was the capital of Chaldea, and its priests the most celebrated in the world for divination. It was in this country that the ancestors of Abraham lived, who are reproached with this idolatry of the serpent, and that of the goat and bull, (Gen. xi. 26, Lev. xvii. 7, Exodus, xxxii. 4, Deut. xviii. 11) and are forbid to consult the Pythons or serpents, or interrogate the dead to know the future. The Pythoness, the witch of Endor, invoked the spirit or shade of Samuel; thus she was supposed to have the power of raising the dead, by the invocations of Python.

The Greeks called this sort of divination *Necromancy*. The serpent was revered as the emblem of the god who gives life, and presides over death, and it was thought that by his means the dead might be invoked, in order to inquire of them the fate of the future.

This divination was unknown in Egypt, whose extreme respect for their dead prevented them from troubling their repose. It was not, then, in Egypt that the Israelites learned this species of divination, but in Chaldea; and although God had condemned to death those that exercised it, yet it was practised 900 years after the death of Moses. King Josiah, who lived about the 35th Olympiad, and more than 900 years after the death of Moses, abolished the Pythons in the kingdoms of Judah and Jerusalem, and the brazen serpent to which they had offered incense, even in the time of Hezekiah, was broken in pieces by order of this good king, 724 years before Christ, and the golden calves of Bethell, adored by the inhabitants of Samaria, were carried away by the Assyrians at the time of the prophet Hosea, 790 years before Christ. I produce these examples to show how long, and with what attachment, the Jews held the ancient worship of the Scythians.

On the medals of Tartary we find the figure of the serpent; on the reverse of a medal of Tyre we find the serpent encircling an egg; and we find the same figure on the medals of Japan, who, in their cosmogony, say it was the warm breath of the serpent that called into life the first man. In the cosmogony of Phœnicia, *Sanchoniathon* describes "*the first beings as being awaked by a voice of thunder, which spoke to them, calling them male and female on the earth and in the sea; and they began to move.*"

The oracle of Delphos was that of the serpent, and the Pythoness delivered to her inquirers the answer of the serpent-god, although, in after-times, it was called the oracle of Apollo. Phidias, the greatest of all sculptors, who built the temple of Minerva, at Athens, during the reign of the arts, and of Pericles, placed the serpent near the spear of Minerva.

The moving stones, or hanging stones, found almost all over the world, were nothing more than emblems of the worship of the bull and serpent, and which stones are often found represented on coins and medals.

But it is time I had done with the superstitions and coins of these dark ages. I will now finish with them, although it must be evident that I have only been able, (from the small space allowed me in your Journal) to skim over a long period of time, picking up now and then, in my rapid flight, from its surface, a grain or two of information, which I have registered, in order to illustrate my inquiry, and endeavour to show who were the first inventors of money, and what kind of money it was that circulated upon the earth. To have entered more fully into the subject, and to have described the thousands of coins and medals of the earliest nations of the world, as connected with their religion, that early religion of the people of the earth, the worship of the bull, the serpent, and the goat—the worship of Baal Peor of Holy Writ—of Bacchus, of Apollo, the Jupiter Olympus of Greece, and the Jupiter of Imperial Rome—which were all parts and portions of the same religion, emblematical of the Power that created, and gives life and light to all things; and to follow it through all its various branches, by all the idolatrous nations, as well as the practice of many of its rites, by the chosen people of God, would, instead of four Letters on this subject, have taken a volume.

I am, Gentlemen,
Your obedient Servant,
Benjamin Cook.

Birmingham,
Nov. 19th, 1828.

ART. X.—ON FOUL AIR IN WELLS, &c. BY CAPTAIN FORMAN.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—I have just seen in the paper, an account of the death of two men, by the foul air at the bottom of a well, which they were going to repair.

These accidents are of very frequent occurrence; and I *believe* might, in a great measure, be prevented, if, through the medium of the public prints, the persons who employ workmen for these purposes could be made aware, that the state of the air in confined places might be previously ascertained by a very simple process, which would be attended with very little expense, and no trouble. It is well known, that the same noxious air that destroys life will extinguish flame; and, therefore, if they would only attach a lighted torch or lantern to a long pole or line, and make it precede the workmen, they would discover, by the manner of its burning, whether the entrance of the men would be attended with any danger.

If the torch burnt freely, the men might descend without fear; but, if it went out, the foul air must be pumped out; and for this purpose, a *portable* sucking pump, with air-tight valves, and a leathern hoze of sufficient length to reach the bottom, (which should be soaked in water, previously to use) ought to be kept by the master masons, and other persons, who employ workmen for these purposes.

In mines, and those places where explosion may be apprehended, Sir Humphrey Davy's safety lamp may be used.

If you think my observations, above, likely to be productive of good, I shall be obliged to you to give them all possible publicity. I am, Gentlemen, Yours, &c.

WALTER FORMAN.

Shepton Mallet.

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ASTOR, LENOX
TILDEN FOUNDATIONS

Robinson's Machinery for Heckling Flax &c.

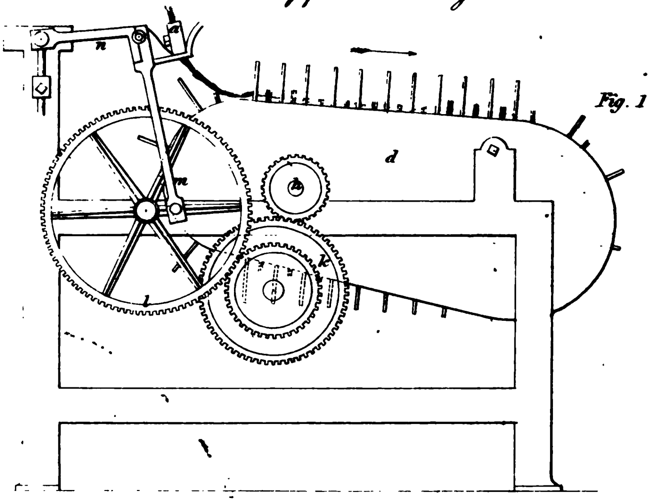


Fig. 1

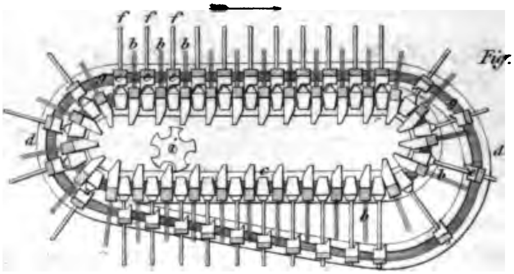
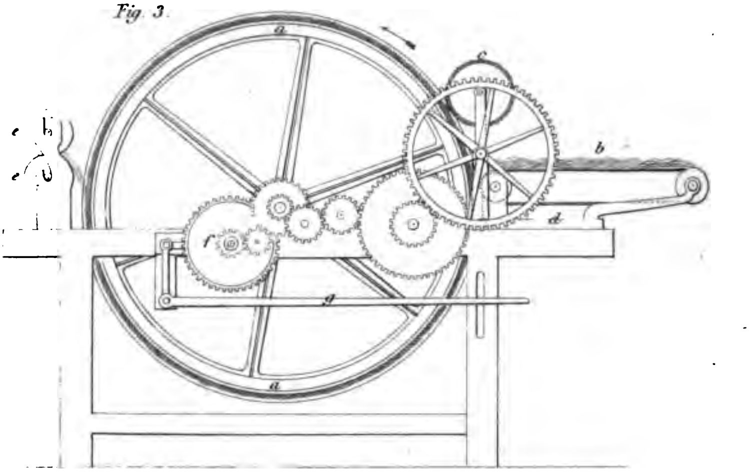


Fig. 2.

Fig. 3.



Dec. 1st 1828

T. Phillibrown

Recent Patents.

To Solomon Robinson, *of Leeds, in the County of York, Flax Dresser, for his Invention of Improvements in Machinery for heckling or dressing, and cleaning Hemp, Flax, and Tow.*—[Sealed June 16, 1827.]

The subjects embraced under this Patent are two machines for dressing or preparing flax and hemp; the first contains a series of heckles, which are made to travel along the frame of the machine, and in their course to separate the fibres of the material operated upon, by combing it; the second, in a great measure, resembles a carding engine, and is employed for taking up loose tow from a feeding cloth, and delivering it in the form of sliver, from between two rollers.

The Patentee says, that his invention consists in the application of a machine to the purpose of heckling or dressing hemp or flax, wherein he is enabled to use heckles without back-board, and by that means to bring a more complete and continued series of points to operate upon the strick of flax, during the process of heckling, than has been done heretofore by any other machine; and by the same apparatus, to strip the tow which collects in the heckles more conveniently and effectually, during the process of heckling, than can be done by the methods heretofore in use, and whereby he is enabled to present the strick of flax to the teeth of the heckles in a new manner.

The hemp or flax having been beaten or crushed, for the purpose of breaking off the boom or woody bark on the outside of its stalk, is then brought to the heckling machine, for the purpose of having its fibres opened, and all the remaining particles of boom or bark combed off. This machine is shewn in the side elevation, Plate V. fig. 1, and consists of two side standards or frames of cast iron, screwed together by cross rails, carrying the toothed gear, and other mechanism, by which the machine is worked; *a*, is a pair of clamps or frame, in which the strick of flax or hemp is suspended, to be operated upon by the heckles.

The construction of these heckles, and the means by which they are worked, will be best seen in the section of the machine, at fig. 2; *b*, *b*, *b*, are the heckles, each consisting of three rows of points, set in a wooden rail, extending across the machine from side to side. The ends of these rails bear in the grooves *c*, *c*, *c*, of the side plates *d*, *d*, *d*, and are intended to slide along in that groove, which is made parallel with some circular ends. Between the several rows of heckles, there are introduced bars *e*, *e*, *e*, which are intended as scrapers, to remove the loose tow from the heckles, as they pass along. These scrapers are made to slide up and down, upon perpendicular guide rods *f*, *f*, which rods are carried along by their stems, moving in the grooves *c*, *c*, pushed forward by the heckle rails.

The ends of the bars or scrapers *e*, *e*, move in an outer groove *g*, *g*, which is made excentric, so that as the heckles *b*, *b*, traverse along in the groove *c*, toward the end of their action in the strick of flax or hemp, the scrapers *e*, are made to rise up the rods *f*, and to push the loose tow out of the points of the heckles.

The movements of this machine arise from the axle *h*, which is put into rotatory motion by a rigger and band from a steam engine, or by any other power. Upon this axle *h*, there is an internal spur wheel *i*, shewn in the section, fig. 2, which, by taking hold of the projecting part or tooth under each heckle, forces the heckles in succession forward in the groove *c*, and by that means drives the guide rods along with them.

In this way the points of the heckles are successively brought under the strick of flax suspended, as already described, at *a*, for the purpose of opening the fibres of the material, and clearing away the boom; and as the points of the heckles collect the tow, the scrapers rise and clear it from them.

It is thought desirable to give a small degree of vibratory action to the strick of flax, in order that it may be occasionally cleaned from the points of the heckles, as the process goes on; this is effected by a train of wheels connected to the main axle.

On the outer end of the axle *h*, there is a pinion taking into a toothed wheel *k*; upon the axle of this last mentioned wheel, there is also a pinion taking into another toothed wheel *l*. At a little distance from the centre of the wheel *l*, there is a pivot, carrying a crank rod *m*, and the reverse end of this crank rod is attached to the lever *n*, to which the clamp, holdmg the strick of flax, is fastened.

It will hence be perceived, that as the heckles traverse, the wheel *l*, will be made to revolve, and by means of the crank rod *m*, causes the lever *n*, with the strick of flax, to be occasionally raised up, and drawn down, so as to give such a vibratory action as will relieve the fibres of the flax from the points of the heckles.

The operation of heckling is first to be performed by open or coarse heckles, and afterwards by close or fine; it is therefore proposed to combine, in one frame, three such machines as the above described; the lever, *n*, being capable of holding three stricks of flax, one beside the other crossing the machine breadthwise; and when the flax has been sufficiently operated upon by the first series of heckles, the strick is to be removed to the next, and so on, until the boom is completely removed, and the fibres are perfectly opened.

The second part of the invention is a machine designed for converting the tow thrown off from the preceding heckling process into sliver fit for spinning into yarn. The machine acts in a great measure like the ordinary carding engine, employed for straightening the fibres of cotton and wool. It is shewn in a side elevation at fig. 3.

The Patentee says, that in this machine he is enabled, by a series of parallel divisions, placed spirally or otherwise on the cylinder, to obtain a sliver from the tow; *a*, *a*, is the drum or cylinder, covered with fine pointed wires; *b*, is the feeding cloth, upon which the tow is spread out, and is progressively brought forward to the teeth of the carding or combing drum, by a rotatory motion, which is given to the rollers by means of a connecting band, leading in any convenient way from some of the moving parts.

The large cylinder or drum *a*, is made to revolve by means of a rigger, affixed upon its axle; the fine points upon the periphery of which takes up small portions of the tow as it goes round, in the same manner as the drum of a carding engine.

The peculiarity of the machine is, that the periphery of the drum is divided breadthwise into any required number of spaces, by parallel ribs placed round it spirally, and as the points on the periphery of the drum take up the tow, a cylindrical brush *c*, placed in contact with the drum, presses the tow into the spaces.

When a sufficient quantity of tow has been collected in the points or combs of the drum, its rotation is stopped, and the feeding apparatus is withdrawn, which is done by sliding back the carriage *a*, that supports the rollers of the feeding cloth. The end of the carding of tow is then raised by hand, from the extremity of the spiral space upon the periphery of the drum, and is conducted between the two rollers *e*, *e*. The drum is then driven round the reverse way to that in which it took up the tow, and the rollers *e*, being put in motion, the tow is drawn off in a perfect sliver, ready to be twisted or spun into yarn.

It has been said, that the rotation of the drum is produced by a rigger or pulley, on its axle. There are in this, as in most other rotatory engines, two riggers upon the axle of the drum; one fixed to the axle, the other sliding loosely round it. The band leading from the steam engine or other first mover, being readily slidden from the loose to the fixed pulley, or *vice versa*, the engine is by that means put in action or stopped.

When the band is upon the first pulley or rigger, the drum revolves in the direction pointed by the arrow, and is there collecting the tow upon its periphery; the wheel work mounted upon the sliding carriage *d*, being then in gear, which actuates the feeding cloth and the pressing brush, the wheel-work at *f*, on the opposite side, is at the same time thrown out of gear; but when it is required to wind off the sliver, the band is passed on to the loose pulley, the train *d*, is withdrawn, and the other train *f*, thrown into gear, which is done by lowering the longer arm of the lever *g*, and consequently causing the carriage with the train *f*, to be slidden forward. By means of this train, the drum is made to revolve in the opposite direction, which permits the sliver of tow to be drawn off, and passed between the delivering rollers. [*Inrolled December*, 1827.]

To John Costigan, *of Collon, in the County of Louth, in that part of the United Kingdom called Ireland, Civil Engineer, for his Invention of certain Improvements in Steam Machinery or Apparatus.*—[Sealed December 13, 1826.]

The subjects of this Patent are various, and apply both to the constructing of steam engines, and the generating of steam. The Patentee says, " in the following description of my invention or improvements on steam engines, or parts of steam engines, I shall have occasion to introduce and describe matters and things, to the invention of which I make no claim, and which form no part of the subject of my patent; and these things are mentioned in the following description, only because I could not otherwise make the nature and utility of my invention or improvements clearly understood."

The specification then goes on to describe a rotatory steam engine, a section of which is shewn in Plate VI. at fig. 1; *a, a,* represents the steam cylinder; *b,* is the main rotatory axle. The cylinder is supported by bearings, upon a standard at *c,* c, to which it is firmly bolted; *d,* is the induction or pipe by which the steam passes from the boiler or generator, to work the engine; *e,* is the eduction or pipe by which it escapes, after having driven the piston forward, which pipe may lead to a condenser, to a chimney, or to the open air; *f,* is the rotatory box carrying the pistons (called by the Patentee, the nucleus). This is made of cast iron, and being firmly secured to the central axle, revolves with it; *g, g, g, g,* are the pistons, floats, or vanes, attached to the central box by hinge joints, on which they turn freely; *h,* is the steam stop.

Costigan's Steam Apparatus

Fig. 1.

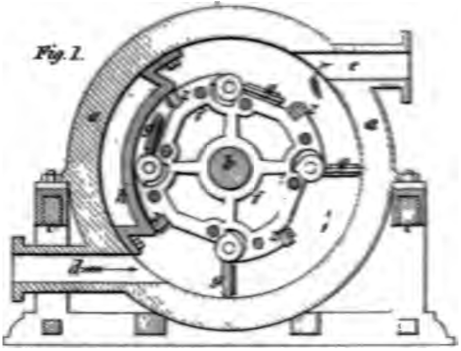


Fig. 2.

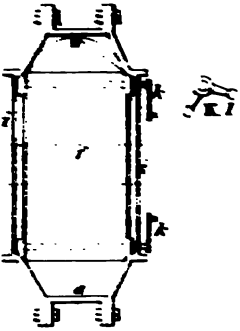


Fig. 3.

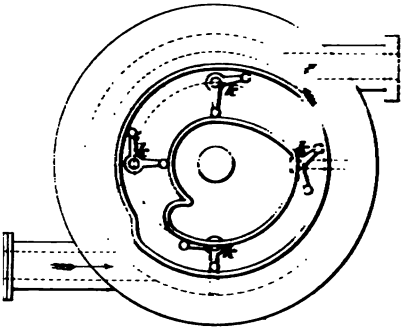


Fig. 4.

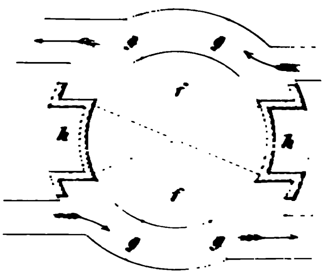


Fig. 5.

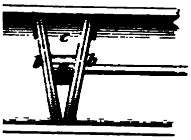
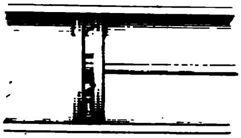


Fig. 6.



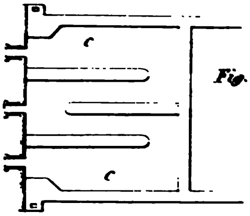


Fig. 9.

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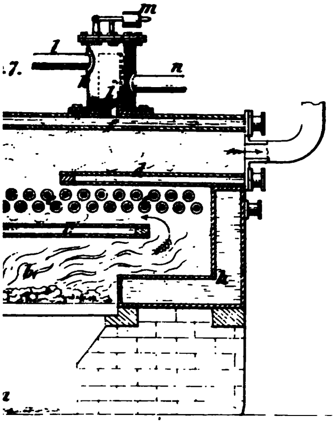
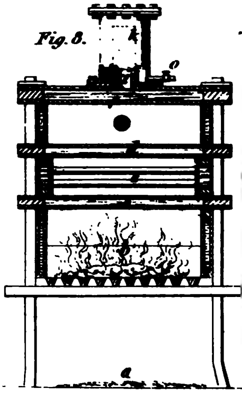
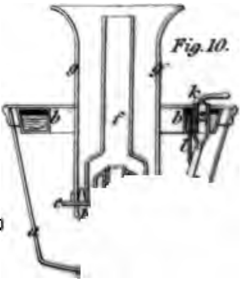


Fig. 8.



Parker's Imp.d Lamp



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The steam being admitted at the pipe *d*, occupies the chamber within the cylinder, and there exerting its elastic force against the steam stop, and against the vane or piston, causes the vane or piston to be driven forward, and consequently the box and the axle *b*, to revolve also. When the piston has reached the eduction aperture *e*, the volume of steam behind it escapes, and the vane falls back, by its gravity, into the recess in the periphery of the box, and the elasticity of the steam acts against the next vane in succession, and so on, carrying the box or nucleus and the axle round, and by a continuation of the vanes brought successively into operation, a continued rotatory motion is effected, the parts being properly packed. This is the ordinary construction of a rotatory steam engine.

The Patentee says, " The whole force of the steam acting in the chamber is exerted against each float individually in succession; consequently they ought to be so contrived, as to have strength and stability sufficient to resist that pressure, and also to turn lightly and with facility on their centres. To answer this purpose, I have invented the method of hanging the floats indicated in the drawing, by a careful inspection of which, and attention to the following explanation, it will be perceived that each float has a small axis in its centre; this axis turns in holes, perforated for that purpose in flauches, which are attached to each end of the nucleus by bolts or rivets."

The flauches are not seen in the figure, but may easily be conceived. " The axis of the floats are of small diameter, but are quite sufficient to sustain the float when folded up in its recess in the nucleus, or while extended across the steam chamber, but when extended, I no longer count on the axis as furnishing any support or strength to the float, which is then held or jointed in the nucleus itself, by the back of the float pressing against a shoulder, and its short end, next the centre of the nucleus, being stopped by another shoulder.

"Now it is evident, while in this position, the more the steam presses against the float, the less the latter needs the support of its axis; but as soon as the float moves forward, so far as to permit the steam which acted upon it to escape by the eduction pipe, it begins to fold itself into its recess, and is then indebted to its axis for support; until again, in its turn, it is extended to sustain the pressure of the steam.

"Rotatory engines have been constructed upon various plans, and some of these, in many respects, similar to the above described machines; I therefore claim no exclusive right to rotative steam engines, cylinders, nucleus, caps, floats, or packings; and confine the subject of this patent, as far as regards rotatory steam engines, to my improved method of hanging the floats, so as to unite facility of movement with the greatest strength required, and the method not yet described of governing their evolutions; and to my improved method of preventing the steam from escaping in one direction from the steam chamber, by the stop which enables me to place my packings in grooves *z*, *z*, *z*, in the periphery of the nucleus, and to make them act on the uniform polished surface of the stop, avoiding by those means the great breadth of packing, and the excessive friction and wear and tear, which has, hitherto, rendered unsuccessful other rotative engines."

Fig. 2, is a section of the steam cylinder, taken transversely; *i*, *i*, are caps screwed to the flauches, between which there is to be hempen packing or metallic packing, similar to the packing of an ordinary piston. The caps revolve with the nucleus, and are confined within an outer rim, properly packed, in order to keep the steam from escaping. The form of the steam chamber may be varied at discretion; that is, it may be circular or angular on its edges, or shewn by dots, in fig. 2.

The Patentee says, " As I do not take out my patent for a steam engine, I shall only describe so much of it as is necessary to shew how far my improved steam machinery is applicable and useful in certain parts of steam engines, and set up no claim to those engines, or any parts of them, other than the improvements herein particularly specified as any invention. Now the operations of floats, which I have described, are not new, nor do I make any claim to them, further than my method of hanging them, as before described, and some additional apparatus, about to be explained. I have described the floats as self-acting by their own gravity; but as the floats of a rotatory steam engine are a considerable weight, they would be induced to fall with such force, in opening and shutting, as might greatly injure the machinery."

To remove this inconvenience, the axle of the floats at one end are made to pass through the flauch, and expand sufficiently far to receive a small double-armed lever *k*, (shown also detached at *k* 1,) which, being turned by a cam at proper intervals, cause the floats or vanes to turn into their proper positions, as the box or nucleus goes round, and consequently prevent any accidental retention of the floats or vanes, by the friction in improper positions.

Fig. 3, represents the excentric groove, or cam, by which the levers of the vanes are turned. This groove, or cam, is placed on the outside of the steam cylinder, and is so formed, that its curves cause the levers to turn upon their axles, and work the vanes as the machine revolves. The Patentee says, that he wishes it to be understood that he proposes to use the cam and levers " for the double purpose of obliging the floats, notwithstanding any tightness of the packing or the joints, to open on entering the steam chamber, and that in doing so it shall not be allowed, however free on its joints, or massive in its construction, to fall with force, or dash itself with violence against the sides of the steam chamber."

The above-described method of moving the vanes or pistons is not absolutely necessary in the construction of rotatory engines, above explained, but in some kind of rotatory engines the Patentee considers that it would be indispensable. For instance, if the central rotatory shaft was placed in a perpendicular position, the vanes would not then be enabled to fall by their own gravity; in that case the levers and cams, as described, would be essential. There is also another variation in the construction of a rotatory steam engine, to which the same is applicable, a diagram of which is shown at fig. 4. This is called, by the Patentee, a double rotatory steam engine, the operations of which are so obvious, upon inspection, that it is not necessary to explain them particularly.

The second head of the invention applies to a reciprocating engine, and is described in these words:—" The piston of a steam engine is a ponderous mass of iron, or other metal, the weight of which, when suspended in a vertical cylinder, and counterbalanced by the connecting rod, and the other end of the beam, is not felt as an evil; but when a steam cylinder is placed horizontally, and the weight of the piston and rod drags continually on the lower side, it creates excessive friction, wears the cylinder oval, and destroys the packing at the lower side of the piston, whilst it soon permits the steam to escape at the upper side. The weight of this apparatus is thus found to be an evil, for which no adequate remedy has hitherto been laid before the public.

" Now the remedy for this defect in horizontal reciprocating steam engines, is a part of my improved steam machinery or apparatus, which I describe as follows:— Fig. 5, *a*, represents a vertical section of what I call my buoyant piston; for I mean nothing less than to render this piston so buoyant, that I could transfer the friction from the lower side to the top of the cylinder, notwithstanding the weight, however great, of the piston; *a*, is a strong boss of iron, in which the piston-rod is fastened, and on each end of which is fixed an iron plate *b*, *b*, at any angle that may be desired. These plates are turned, so that even in that position they fit the cylinder as well as those usually placed in it at right angles.

" The edges of these plates are properly formed to receive packings of hemp, steel, or brass, or any proper mixture of metal. (I prefer to use the latter.) When so packed, these become two pistons, touching at the lower edge, but being some inches apart at the top which forms the compartment *c*. Both pistons are perforated with a small bolt, and the holes are covered by hanging valves, which open outwards.

" Supposing the steam to be filling the cylinder in the direction of the dart, it will shut the valve, and prevent steam from entering the compartment *c*; and if, through any imperfection of the packing, steam should enter the compartment, it would escape by the valve on the opposite side. It is scarcely necessary to state, that the steam acting at the other end of the cylinder would have a similar effect.

" Hence, on whichever side of the piston the steam passes, the compartment *c*, between the pistons, always belongs to the exhausted or empty side; consequently, the pressure of the steam acting on the inclined plane of the piston, not only pushes but also lifts it upwards, in proportion to the inclination given it.

"Having ascertained the weight of the pistons, and rod, and the elastic force of the steam to be used in the cylinder, the inclination of the pistons should be such as would render them buoyant by the elastic force of the steam."

As the elliptical form of the piston, last described, may be found difficult to make, another construction of buoyant piston is exhibited at fig. 6. In this figure, the pistons are fixed on the rod at right angles, and parallel to each other, and are turned circular, in the usual way. Between the two pistons, two compartments, *c*, *d*, are formed, separated from each other by a horizontal partition. The two pistons have apertures leading to the two compartments respectively, which are closed by pendant valves; those of the upper compartment *c*, opening outwards, and those of the lower compartment *d*, opening inwards. The steam, therefore, occupying the cylinder, and pressing against the piston from either end, will be prevented from entering the upper compartment *c*, but will be readily admitted to the lower compartment *d*, and there, exerting its elastic force upwards, against the middle or horizontal partition, will, if the area of the partition be properly proportioned to the weight of the piston, and the elastic force of the steam, render the pistons, as they move along in the cylinder, perfectly buoyant.

The Patentee says, "I do not confine myself to the two methods above described, of rendering pistons buoyant, nor to the kind of valves there indicated; but I consider the above methods of rendering pistons buoyant by the pressure of the steam acting in the cylinder, however varied or modified, as my exclusive right."

Another method of obviating the defects of the horizontal cylinder steam engine, has for its object to cause the horizontal steam cylinder to revolve slowly in proper bearings, which shall not prevent the passage of the steam into and out of the cylinder, and by so revolving, will present every part of the cylinder and stuffing box to equal friction and wear. "I make this motion of the cylinder slow, and either continual or periodical; and in the latter case, which I prefer, I cause the motion to be communicated to the cylinder at that almost imperceptible point of time between the steam ceasing to act on one side of the piston, and beginning to act on the other, as the movement of the cylinder will then be effected with less difficulty."

The Patentee then goes on to describe several ways of causing the cylinder to revolve, either by hand or by machinery, which consists in mounting the cylinder as an axle, on fixed bearings; and, if to move by machinery, attaching a toothed wheel to one end, the teeth of which shall take into an endless screw, and this endless screw be driven round by a succession of impulses communicated to it by the traversing of the piston rod, or by any other convenient means, such as those which are employed for opening and closing steam valves.

The last feature of this Patent purports to be a new constructed boiler or generator, for the production of steam. Fig. 7, is a perpendicular section of the boiler or generator, taken longitudinally; and fig. 8, is a transverse section of the same; *a*, is the ash-pit; *b*, the fire-place, formed by iron bars resting on sleepers, as usual; *c*, is a flat vessel of capacity, intended to contain water, which is constructed by riveting iron-plates together, with bars intervening, to keep the plates parallel and at a proper distance apart. Fig. 9, shews the manner in which these bars are proposed to be placed; *d*, is another similarly constructed flat vessel holding water, and in the flue, between these two vessels, there are a series of pipes, *e*, *e*, placed transversely. At the top of the flue, a flat vessel *f*, of the same description, is placed, and another in the front at *g*. A reservoir *h*, is also adapted to the back of the fire place, and these vessels and pipes are all to be connected together by small bent tubes, to be attached by flanges and screws to the short pipes, which are seen projecting on the outsides of the several vessels.

The flame and heated vapour from the furnace, in passing through the flue towards the chimney, heats the several vessels above described, containing water, and causes the steam to rise through the tube *i*, at top, into the enclosing vessel *k*, from whence it proceeds, by the pipe *l*, to the engine. This vessel is furnished with a safety valve *m*, and a discharge pipe *n*, through which any superfluous steam may be blown into the air, or passed up a chimney, and any water which may condense in the vessel *k*, may be drawn off by a small cock *o*.

The Patentee goes into an elaborate description of the modes of putting the several parts of this generator together, and of the variations in form and disposition of which it is susceptible; but as the intention is sufficiently obvious from the figures, and the plans are not new, but common to a great many boilers or generators, described in our preceding volume, we consider it unnecessary to enlarge upon this part of the subject.

It may, however, be necessary to point out the Patentee's particular views, with respect to this part of the invention. "The construction of my generator," he says, "which affords such facility of building or re-building, is of great importance, as all the flat vessels are connected by tubes, and can, if one side is worn by the effects of fire, be turned, and will then last as long again. And if a few spare vessels are kept for the purpose of changing any that may want repair, the one can be taken out, and the other put into the apparatus, without any material delay; and when not in use, the form of these vessels enable them to be stowed in so small a volume, that, even on board ship could not render keeping them inconvenient."

In conclusion, he says, "I claim as my invention, or improvement, the above described method or methods of reducing the quantity of water included in my apparatus, and exposed to the action of heat, to the most minute quantity desirable in practice, by the introduction of filling pieces of iron, or other metal into the cavities, or compartments of the same, and so constructing the said apparatus, as that its cavities and compartments shall be easy of access, for so introducing or placing the said filling pieces in their proper positions, and for withdrawing them and cleansing the apparatus, when the accumulation of sediment, incrustation, or other deposit, may render the same necessary."

"By this improved apparatus, I save fuel, occupy little space, and can work with impure or sea water, which would be impracticable when exposed to the heat in minute quantities, without the filling pieces, by means of which I can expose to the action of heat, one eighth of an inch thick, or even less, of water, and when necessary to clean the cavity, I can, by withdrawing the filling pieces, enlarge it, so as to admit of being cleansed with facility." [*Inrolled June* 1827.]

To SAMUEL PARKER, *of Argyle Street, in the City of Westminster, and County of Middlesex, Bronzist, for his having invented or found out certain new Improvements in the Construction of Lamps.*—[Sealed 1 Feb. 1827.]

THE improvements proposed under this Patent are, first, placing an argand lamp in a bason, bowl or vase, of glass, (solid glass, the Patentee says;) secondly, the introduction of a glass tube called a *coronal*, surrounding the ordinary glass chimney; and thirdly, the mode of raising the wick of the lamp, by turning this coronal round.

Plate VI. fig. 10, is a section of the lamp, and glasses which enclose it; *a*, *a*, is the glass vase, or bason; *b*, *b*, is the circular reservoir containing the oil, as usual; a flange on the edge of which rests upon the metal rim set round the top of the glass vase; *c*, is the argand burner, as in other argand lamps; *d*, is the pipe or tube conducting the oil from the reservoir to the burner; *e*, *e*, is a circular metallic plate, carrying the glass chimney *f*, and the coronal *g*, *g*. This circular plate is perforated with holes, in order to allow the air to pass up the burner.

The collar round the burner, which confines the circular wick, is cut with a spiral groove within, for the purpose of carrying up the wick, when turned round. Arms of wire, descending from this collar, are attached to the circular plate *e*, and the lower rim of the glass coronal rests upon the plate. A pin, *h*, in the rim of the coronal, drops into a notch in the plate *e*, and thereby locks the coronal and the plate together, consequently turning the coronal by hand causes the plate to turn, and the wick to be raised whenever that may be necessary; *i*, is a stem at bottom of the glass vase, which, by means of the metallic collar surrounding it, enables the lamp to be screwed to a standard.

The cock *k*, has a cylindrical hollow plug, with a partition across the middle. The plug has small holes perforated in its sides, both above and below the partition. When it is required to fill the reservoir *b*, with oil, the plug of the cock is turned, so as to bring the aperture in the upper part of the plug opposite to a corresponding hole in the socket of the cock, communicating with the reservoir; the oil may then be poured in, until the reservoir is full.

By turning the cock the reverse way, the aperture in the lower part of the plug allows the oil to flow from the reservoir, through the pipe *d*, to the burner, and there is a small lateral pipe *l*, for the air to escape through.

The Patentee claims, as his invention, mounting an argand lamp in a solid glass vase, bason or bowl, in the manner described, which enables the lamp to be removed, without the danger of spilling the oil; the adaptation of the glass coronal, opening wide at the top, and freely admitting the air, which keeps it always cool, so that it may be readily turned without burning, or greasing the fingers; and the mode of raising the wick, by a pin at the bottom of the coronal falling into a notch in the circular plate, connected to the collar round the burner, which enables the wick to be raised when required.—[*Inrolled April* 1827.]

To WILLIAM SMITH, *of Sheffield, in the County of York, Merchant, for his Improved Method of Manufacturing Cutlery, and other articles of Hardware; with or by means by Rollers.*—[Sealed 20 Feb. 1827.]

THE Patentee says, that in order to understand the object of his improvement, it is necessary, in the first place, to describe the ordinary mode of making knives.

A sheet of steel being provided, the blades of knives are cut out of the sheet, and the backs, shoulders, and tangs, of wrought iron, are attached to the steel blades, by welding at the forge. The knife is then ground to the proper shape, and the blade polished and hardened.

Instead of this welding process, the Patentee proposes to make the knives entirely of steel, and to form them by rolling in a heated state between massive rollers, the shoulders or boulsters, and the tangs for the handles being produced by suitable recesses in the peripheries of the rollers.

When the knife is to be made with what is called a scale tang, that is a broad flat tang, to which the handle is to be attached in two pieces, riveted on the sides of the tang, the rollers are then only to have recesses cut in them, in a direction parallel to the axis for forming the boulster.

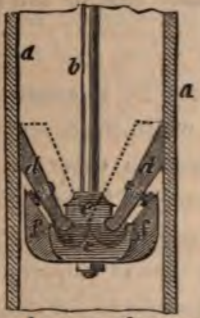
The plate of steel having been heated, is to be pressed between the two rollers, by which the blades and the parts for the scale tangs will be pressed out flat and thin, and those parts which pass between the grooves or recess will be left thick or protuberent, forming the boulster for the shoulder of the blade. But if the tangs are to be round in order to be fixed into handles, then it will be necessary also to form transverse grooves in the rollers, that is, at right angles to those which give shape to the boulsters, the transverse grooves corresponding in length to the length of the intended tang.

When the plates of steel have been thus rolled, forming three or more knives in a breadth, the several knives are to be cut out by the ordinary mode of what is called slitting, and the blades and shoulders ground, hardened, and polished, in the usual way.

It is in the contemplation of the Patentee to make rasps for shoemakers by similar means, that is, to roll plates of steel between excentric rollers, which will form the rasps, tapering at the ends. After they have been so rolled, they may be roughed by the chisel in the usual manner, and afterwards hardened.—[*Inrolled August* 1827.]

To JOHN WHITE, *of Southampton, in the County of Hants, Engineer and Iron Founder, for his having invented certain Improvements in the Construction of Pistons or Buckets for Pumps.*—[Sealed 1 Feb. 1827.]

THIS improved piston or bucket is designed for a pump, the barrel of which is square. The novelty consists principally in the mode of mounting and securing the valves in their seat; that is, attaching them to the plunger.



The figure in the margin represents a bucket or piston upon the improved principle, as it would appear when moving in the barrel; *a*, *a*, are the sides of the barrel shewn in section; *b*, is the pump-rod; *c*, the box or plunger; *d*, *d*, the valves.

The box or plunger *c*, is proposed to be made of cast iron, with semi-cylindrical recesses for the cylindrical back parts of the valves also of cast iron to work in, forming a sort of hinge joint. A cap, *e*, which screws on the pump-rod, confines the valves in their places, leaving them only room to vibrate; *f*, *f*, are wings of iron, affixed to the sides of the box or plunger, at the upper part of which a small stud is placed, for the adjusting screw to strike against when the valve falls. By means of these screws, the valves are adjusted so as to fall exactly into close contact with the sides of the pump-barrel.

The particular advantage contemplated by the Patentee in this construction is, that the edges of the valves, and their bearings against the regulating studs, will wear together, and always keep in good condition.

In order to keep the sides of the bucket air-tight, thick pieces of leather are to be attached to the valves, as shewn by dots; the curved recesses on the sides of the pump-box being made for the curved ends of the leathers to work in.—[*Inrolled, August* 1827.]

To WILLIAM DICKINSON, *of Bridge Street, Southwark, in the County of Surrey, Tin-Plate Merchant, for his Invention of an Improved Buoyant Bed or Mattrass.* [Sealed August 13, 1827.]

THE principle object of the Patentee is, to construct a seaman's bed or mattrass, which, while it possesses all the advantages of elasticity common to other beds or mattrasses, shall also have the property of being buoyant in the water, and therefore may be resorted to as a means of saving the life of an individual in case of shipwreck.

A piece of ticking, cut to the dimensions of the intended bed, (say for one person) is to be spread out flat and thin, and about four and a half pounds of horse-hair carefully and evenly distributed over it; upon the horse-hair, thin of cork are to be laid in several thicknesses. About five pieces pounds of cork, cut into sheets one eighth of an inch thick, will be sufficient. Over the cork, another similar quantity of horse-hair is to be distributed evenly, and then a piece of ticking, as before, spread out, and covered over the whole. The edges, that is, the sides and ends of the bed or mattrass, are then to be closed by sewing, as usual, and the internal parts secured together by stitching through and through.

The bed, thus made, will possess all the elasticity necessary for sleeping upon with comfort, and in the event of any accident at sea, the sailor, to whom the bed belongs, may strap it round his body and carry it about him, without inconvenience; until it may be necessary for him to save his life by swimming, when being thus prepared with a buoyant material, he may jump into the water, and will float without any personal exertion.

Beds of this description may be made with flocks, wool, or other materials in place of horse-hair, the thin sheets of cork applied to the purpose of forming the basis of the bed being the particular feature of novelty claimed. It is also to be observed, that beds, pillows, seats, mattrasses, and other cushions for ordinary purposes, may be made in the same way, and will possess the advantages of being very light and healthy to sit or recline upon.—[*Inrolled February*, 1828.]

To JOHN BROWN *and* WILLIAM DUDERIDGE CHAMPION, *of Bridgewater, in the county of Somerset, Merchants and Copartners, for their having found out and discovered a certain composition or substance, which may be manufactured or moulded, either into Bricks or into Blocks of any form for Building, and also manufactured and moulded to, and made applicable for all internal and external ornamental architectural purposes, and for various other purposes.*—[Sealed May 5, 1827.]

THE bricks and other articles proposed to be manufactured from this new compound, are intended to resemble those commonly called *Bath bricks.* The compound is to consist principally of a loamy deposit, formed in the river Parret, within a mile or two, both above and below the town of Bridgewater, which is to be mixed with a small quantity of clay and sand.

It is of very considerable importance to the perfecting of the articles intended to be made from this new compound, that the materials should be minutely broken, and blended together without lumps. It is therefore directed, that when the materials are ground in an ordinary pug-mill, that great care be taken to bring the whole under the operation of the knives or cutters, and it is suggested, that it would be advisable to introduce other cutters into the mill, to work between the ordinary cutters.

After having been broken by the pug-mill, it is thought desirable to reduce the material still finer by the hand operation of grinding upon a stone with a muller, and indeed to go through that operation two or three different times, until it is reduced to the finest condition.

The materials being then mixed up with such a quantity of water, as shall enable the mass to work freely, but stiff, the bricks or other articles to be made, may then be formed by moulding, as ordinary bricks are moulded; or any other forms, such as vases, cornices, blocks, and various architectural devices and ornaments, may be produced in the same way. It should, however, be observed, that if too much water be mixed with the materials, that the articles will be subject to get out of form in drying. Pressure should be applied in moulding the material, and it is proposed by the Patentees to employ a stock for this purpose, but of what construction, is not shewn.

After moulding, the articles are to be placed upon boards to dry in the air, under a shed, taking care that the drying is gradual, else they will be subject to crack, and when perfectly dry, they are to be baked as other articles of pottery, in a kiln or oven.

Some care is necessary in the selection of the clay, which is to be mixed with the other materials, as different kinds of clay will produce variations in the colour of the brick when baked, some being lighter and others approaching to a dark red. The small quantity of salt which may be mixed with the loamy deposit, after the articles have been baked, will be so inconsiderable, as to be no detriment to the bricks, if employed for the purpose of building.—[*Inrolled July,* 1827.]

To THOMAS BREIDENBACH, *of Birmingham, in the County of Warwick, Merchant, for his Invention of certain Improvements on Bedsteads, and in making, manufacturing, or forming Articles to be applied to, or used in various ways with Bedsteads, from a Material or Materials hitherto unused for such purposes.*—[Sealed 13 August, 1827.]

THE improvement proposed consists in the employment of woven metallic wire gauze, which is to be applied to various parts of a bedstead, that is to form the sacking, the tester, and the back; and in place of hangings, or curtains, to enclose the sides and end.

The object proposed by the employment of woven metallic wire gauze, is to prevent the harbouring of vermin in the bedstead, or its hangings; but it must be obvious that the invention is most particularly applicable to tropical climates, where a free circulation of air is desirable; and at the same time it is absolutely necessary to close every avenue by which musquittoes or other insects, or snakes, could approach the persons sleeping.

In adopting this metallic gauze, in place of the sacking, tester, or head of the bedstead, the wire may be woven in a pannel, and its edges made fast to the posts and rails of the bedstead, whether of wood or metal; but in applying the metallic gauze to the hangings or bed furniture, it is necessary to join the edges of the sheets of gauze together, by sewing them with wire, and thereby forming hinges.

The several pieces or pannels of gauze, may by these means be made to fold together, and the hangings may, in that way be opened or closed, and every aperture for the ingress of musquittoes or other insects or reptiles, will by those means be rendered perfectly secure, and the persons sleeping inaccessible.—[*Inrolled February*, 1828.]

To George Poulton, *of Stafford Street, Old Bond Street, in the County of Middlesex, Tailor, for his Invention of an Instrument, Machine or Apparatus, for Writing, which he denominates a Self-supplying Pen.*—[Sealed 4 July, 1827.]

This invention is said to consist of three parts; a tube or reservoir, a pen, and a shield. These, the Patentee says, may be employed together, or separate.

The tube, or reservoir, to contain the ink, is proposed to be made of gold or silver, that it may be kept free from corrosion, and within it a small weight or plunger is to act, for the purpose of expressing the ink by its gravity, through a valve at bottom. The pen, which is made of steel, is to be screwed to the reservoir, and should be coated with metal, to prevent its rusting, and over all a shield is to be slidden, to enclose and protect the pen.

No drawing is appended to this specification, therefore we are unable to give a more perfect description of the invention.—[*Inrolled January*, 1828.]

Novel Inventions.

Towing Vessels by Steam Power.

A Correspondent in the North sends us the following account of some interesting experiments on the application of *Steam Tracking* to inland navigation, made lately on the Forth and Clyde Canal. The notes were taken, we understand, by a gentleman who was present, and their accuracy merits the most entire confidence.

The result is unquestionably important, as it shows that with moderate speed, Steam Tracking may be advantageously applied to inland navigation. Itwill be seen, that with the velocity commonly employed in the case of coal boats, one hundred weight of coals per hour (costing about 4*d.*) does the work of nearly four horses, without injury to the canal. If we estimate the *keep* of the horses at 3*s.* 6*d.* each per day, the expense of tracking by steam would be to that of tracking by horse power nearly as *one* to *four*, exclusive of the original cost of the engine. The action of the paddle seem to have very little effect on the surge, which depends almost entirely on the speed of the boat, whether dragged by horses or steam.

" The steam boat employed in the experiments was one of ten horse power, built for a ferry boat, and having its paddle wheels at the sides—its regular performance *in open water* is 36 strokes per minute—fuel about one cwt. per hour.

" *First experiment.*—The steamer had nothing in tow; the engine made 34 or 35 strokes a minute (according to the width of the canal), and the speed of the boat was at the rate of six miles per hour.

“ The surge on the bank was considerable, and such as would be destructive, unless the canal were faced with stone.

“ *Second experiment.*—Three coal scows, containing in all about 90 tons of coal, were taken in tow: the engine made about 18 strokes per minute, and a mile was performed in 21 minutes, or under three miles per hour. The surge trifling.

“ *Third experiment.*—One of the scows was detached. The engine made 22 to 24 strokes, and the speed of the vessels was increased to a mile in 17½ minutes, or rather less than 3½ miles per hour. Surge moderate.

Fourth experiment.—A vessel of the largest size, capable of passing the locks, and drawing the full depth of them (but having only 65 tons of cargo), was linked to a coal gabert, having 47 tons aboard, and both were taken in tow. A mile now occupied 41½ minutes, or less than 1½ miles per hour. No surge.

“ *Fifth experiment.*—The above vessels were cast off from the steam boat, and five horses were yoked to them by the usual hauling lines. A mile in this case occupied 34 minutes, or about 1¾ miles per hour.

“ During this mile, the horses were exerting at more than their average rate, but as the canal in this part was winding and unfavourable, the times 41½ and 34 minutes may be taken inversely as the fair ratio of performance in the two cases.

“ It appears from these experiments, that tracking by steam power is much cheaper than by horses, and if on further investigation, it be found that the inconveniences now experienced in its application can be obviated by proper arrangements, great advantage will arise from its use on such canals where locks do not interfere too frequently.”

The propelling of vessels by steam, though a subject which has occupied the attention of the mechanical world extensively for several years past, appears at this moment to have lost none of its interest, nor the powers of invention, as applied to that object, to be yet exhausted. There are now, no less than *seven* Patents in progress for improvements, applicable to propelling, all of which are dis-similar in their *modus operandi,* and some of them, in our opinion, possess considerable ingenuity.

The great objection to propelling vessels on canals by steam power, appears to have arisen from the considerable agitation which the water experiences by the action of the paddles. We have every reason to believe, that a plan, which has been tried with considerable satisfaction to the projector, will shortly be before the public, by the employment of which these objections will be completely obviated; besides other advantages being gained of considerable importance.

Improved Globes.

Major Muller, of Hanover, Librarian to His Royal Highness the Duke of Cambridge, has recently obtained a Patent, in England, for improved modes of mounting artificial globes, which are designed to solve a variety of problems in astronomy, spherical trigonometry, and navigation, with much greater precision than can be effected on globes mounted in the ordinary way; beside which, the wooden horizon being dispensed with, and the globes suspended in a more independent way, the real and apparent movements of the earth and the heavens will be more rationally represented, and it is supposed, more easily comprehended by the tyro in science.

We refrain from describing the peculiar construction of these globes until the Patentee has deposited his specification. When that is done, we shall give an early report of the improvement, with such remarks as the subject may, in our estimation, merit.

SPECIFICATIONS OF AMERICAN PATENTS.

(From the Franklin Journal.)

To W. MAGAW, *of Meadville, Pennsylvania, for making Paper of Straw.*

TAKE any quantity of straw, and boil it in water with salts of ley, pot or pearl ash, in the following proportions. To one hundred and fifteen pounds of straw, add from fifteen to twenty pounds of the salts of ley, and boil it about thirty minutes, then draw off the water, and put the straw into a common paper engine, to be manufactured like rags into paper.

The improvement or discovery consists in preparing straw, hay, or other vegetable substances, for the manufacture of paper in the following manner:—Take any quantity of straw, hay, or other vegetable substances, and boil it in a solution of salts of ley, pot or pearl ash, or other alkali, or lime, in the following proportions, viz. To one hundred and fifteen pounds of straw, hay, or other vegetable substance, add from fifteen to twenty pounds of salts of ley, pot or pearl ash, or other alkali, or lime, and boil them about thirty minutes, or steep the materials in the solution a few days, or until saturated; then draw off the water, and put them into a common engine, to be manufactured into paper like rags.

The discoverer claims as his exclusive improvement or discovery, the materials, and the mode of preparing the straw, hay, or other vegetable substances, so as to render them fit for the manufacture of paper.

To JAMES P. ALLAIRE, *for a Steam Chimney or Receiver.*

THE improvement is an application of the heat, that usually passes up the chimney and is lost, in such a manner to the steam after it is generated, as to rarify or still further expand it. It consists of a steam chimney or receiver, so constructed that the steam generated in the boiler must, when used, pass over or by the heated metal of the fire chimney, in such quantities only as is necessary to supply the engine.

The space from the external part of the steam chimney or receiver, to the external part of the fire chimney, being small, each renewed supply of steam passing through the steam chimney or receiver is brought in contact with the heated metal of the fire chimney, which imparts the extra heat in the metal to the steam, thereby keeping the temperature of the steam used nearly up to that of the metal of the fire chimney, and also preserving the metal from oxidation or burning.

As the improvement consists in passing the steam over or in contact with the heated metal, to promote expansion, without exposing it to oxidation, the fire may be applied outside of the steam as well as inside, by having the conductor of the steam of a suitable size, and surrounded by fire.

It may be useful for distilling, heating rooms, &c.

American Patents,

FOR INVENTIONS AND IMPROVEMENTS,

Granted in the United States from Nov. 1827, *to Feb.* 1828.

(Continued from page 47.)

In the making of ornamental hair combs, termed by the manufacturer *side and neck combs*; Uriah Bailey, West Newbury, Essex county, Massachusetts, Nov. 15.

In the hydrostatic steam cradle, for raising and transporting ships or vessels, of any size or weight, over bars and shoals; Charles Miner, of Lyne, Conn., Nov. 16.

In rolling the backs of tortoise-shell combs; Nath. Bishop, of Dunbury, Conn., Nov. 17.

In an invention, or machine, by him called the frame chain; David Leslie, of New York, Nov. 19.

In making leather water proof; David Kizer, of New York, Nov. 19.

In the mill for sawing timber, called the reciprocal saw mill; Wm. Kindall, jun. of Waterville, Kennebeck county, Maine, Nov. 23.

In the machine for washing clothes, and shelling corn; Benj. Rice, of Denmark, Lewis county, New York, Nov. 23.

In a machine for using the escape steam of an engine; Davis Embree, New Richmond, Clermont county, Ohio, Dec. 3.

In the machine for turning rake and hoe handles; Wm. Shepardson, and Josiah C. Sperry; the former of Hamilton, Madison county, and the latter of Camden, Oneida county, New York, December 3.

In the vest spring, and stiffener; J. G. Shute, Boston, Dec. 5.

In four-wheel carriages; Theodore Brooks, and Daniel W. Eames, Rutland, Jefferson county, New York, Dec. 6.

In the copper puncher; Wm. Ballard, Boston, Dec. 6.

In a machine called the windlass pegging jack; S. Nourse, Danvers, Essex county, Massachusetts, Dec. 8.

In breaking flax; Henry Schoonhoven, town of Pulteney, Steuben county, New York, Dec. 11.

In *hanging or slinging* the fore, main, and mizen yards of a vessel; Isaac Carver, jun. Prospect, Waldo county, Maine, Dec. 11.

In the saw mill; Benj. Overman, Greenboro, North Carolina, Dec. 11.

In the grist mill; James Robinson, of Buckshin township, Ross county, Ohio, Dec. 11.

In warming and heating rooms; Archibald M'Allister, and John Iggett, of Salem, Washington county, New York, Dec. 15.

In the common hand rake, for raking hay; Ambrose Foster, of Auburn, Cayuga county, New York, Dec. 19.

In cutting fur; Michael Petre, of Womelsdorf, Berks county, Pennsylvania, Dec. 20.

In the tread wheel; Cornelius Watson, of Addison township, Gallipolis county, Ohio, Dec. 22.

In propelling vessels; Elijah Bryan, of New York, Dec. 22.

In distilling; James Lusk, of Butler county, Ohio, Dec. 22.

In spectacles, and single eye glasses; S. Newton, Washington, D. C. Dec. 22.

In the Barshear plough; Eli Pugh, of Chatham county, North Carolina, Dec. 24.

In the machine for turning rake handles; Anson Sperry, of Rotterdam, Schenectady county, New York, Dec. 26.

In a machine called the sliding-plane turner; Jon. Sparrow, of Portland Maine, Dec. 26.

In spinning cotton; John C. Dewees, of Mason county, Kentucky, Dec. 28.

In the mortising machine; Abel Greenleaf, and Hollis Amidon, of the town of Mexico, Oswego county, New York, Dec. 28.

In cast iron sheeves for shipping; Frances Seymour, administratrix of Benjamin Seymour, of Plymouth, Massachusetts, Dec. 29.

In the plough; Bird Murphy, of Union district, South Carolina, Dec. 31.

In the saw mill; William Kindall, of Waterville, Maine, Dec. 31.

In gates for locks, Daniel Rogers, of Little Falls Town, County of Herkimer, New York, Jan. 4.

In the hydrostatic elevator, James M'Creary, of Noblestown, Alleghany county, Pennsylvania, Jan. 5.

Improvement called a fluid agitator, or churning machine; Samuel H. Baker, of Wells Township, Bradford county, Pennsylvania, Jan. 10.

In manufacturing artificial stone, Robert M'Kay, Donald M'Kenzie, and Joseph Woodhull, Caledonia, Livingston county, New York, Jan. 16.

In the tubular steam generator, Reid R. Throckmorton, New York, Jan. 17.

In the machine for dressing flax and hemp, John C. Wenzle, of Louisville, Kentucky, Jan. 17.

For sundry methods, by which inflammable gasses may be generated during the combustion of anthracite coal, Minus Ward and Richard Wilmot Hall, of Baltimore, Jan. 19.

In the common turning lathe, Jefferson Moore, of Leverett, Franklin county, Massachusetts, Jan. 19.

In the vibrating machine for knapping cloth, Samuel Duncan, of Northampton, Montgomery county, New York, Jan. 21.

In making water proof cloth and water proof leather, J. L. Comstock, of Hartford, Connecticut, Jan. 21.

In the floating excavator, Harvey W. Campbell, of Lockport, New York, Jan. 22.

In the mode by which the yards of ships, or vessels are suspended, topped, and braced, Samuel Adams Wells, of Boston, Jan. 23.

In manufacturing barrels, hogsheads, &c., William Adams and Marcus Adams, the former of Ogden, Monroe county, and the latter of East Bloomfield, Ontario county, New York, Jan. 24.

In the machine for mortising, John J. Kelogg, of Richmond, Oswego county, New York, Jan. 24.

In the spring saddle, Thomas Harvey, of Middletown, Delaware, Jan. 24.

In the screw water wheel, Ebenezer Beard, of Charlestown, Massachusetts, Jan. 25.

In the plough, William Ward, of Avon, Livingston county, New York, Jan. 26.

In the cooking stove, Robert C. Rouse, of Athens, Green county, New York, Jan. 26.

In the construction of presses for hay, &c., Moses B. Bliss, of Pittstown, Kennebeck county, Maine, Jan. 26.

In the grist mill, William L. Taylor, of M'Minn county, Tennessee, Jan 28.

In making brick, David Rising, of the town of Colchester, Chittenden county, New York, Jan. 29.

In the steam engine, Simeon Broadmeadow, New York, Jan. 29.

In the steam engine, William Willis, of Charlestown, South Carolina, Feb. 1.

In making an oil paint for painting plastered walls in houses, Alexander Thompson, of Betheney, Genessee county, New York, Feb. 2.

For a medicine, entitled improved rheumatic pills, Ezra Deane, of Biddeford, Maine, Feb. 2.

In the manufacture of combs, Uriah Bailey, of West Newbury, Essex county, Massachusetts, Feb. 2.

For a medicine, entitled a remedy for dysentery, dyspepsia, jaundice, and all bilious complaints, Truman Powell, of Burlington, Chittenden county, Vermont, Feb. 2.

In the machine for packing cotton, William J. Cocke, of Cabin Point, Sussex county, Virginia, Feb. 4.

In the machine for distilling spirituous liquors, &c., William J. Cocke, of do. do. Feb. 4.

For an improvement in stoves, chimneys, furnaces, and steam engines, John James Giraud, of Baltimore, Feb. 10.

In the excavator, or self-loading cart, Waldren Beach, of Philadelphia, Feb. 5.

In the printing press, John C. Holbrook and Elihu H. Thomas, of Brattleborough, Vermont, Feb. 7.

In the machine for junking ivory, by the aid of water, steam, &c., Linus Pratt and Fenner Bush, of Meriden, New Haven county, Connecticut, Feb. 9.

In making hubs, or naves for carriage wheels, called the Hercules hub, Hercules Thomas, of the Town of Midway, Norfolk county, Massachusetts, Feb. 8.

In the machine for breaking and dressing flax and hemp and hulling grain, Evans Christian, town of Philadelphia, Jefferson county, New York, Feb. 8.

In thrashing grain and grass seed, and breaking flax, David W. Webster, of Amesburg, Massachusetts, Feb. 9.

In the machine for cutting straw, Warren Cummins, of Livingston county, New York, Feb. 11.

In the steam engine, Isaiah Jennings, New York, Feb. 11.

In the grailing machine, Philo Pratt, of Merriden, Connecticut, Feb. 12.

In slitting ivory into plates for combs, do. do. do.

In the specific steam engine, Augustus S. Kirk, of Smithfield township, Jefferson county, Ohio, Feb. 13.

In separating and collecting gold and silver from ores, earth, &c., William H. Folger, Spartansburg district, South Carolina, Feb. 13.

In a machine called the apple grater, Uri Emmons, of New York, Feb. 13.

In the canal steam boat, John F. Wight, of Erie, Pennsylvania, Feb. 14.

In the cooking stove, Ezekiel E. Bennett, of Kingsbury, Washington county, New York, Feb. 15.

In lotteries, William E. Spalding, of Brooklyn, Windham county, Connecticut, Feb. 15.

In the thrashing machine, Elias B. Hort, of Charlestown, South Carolina, Feb. 18.

In the machine for cutting, sawing, and polishing marble, Archibald M'Allester, town of Salem, Washington county, New York, Feb. 18.

In the machine for swingling flax, Samuel Achey, of Heidelberg township, Lebanon county, Pennsylvania, Feb. 18.

In the water wheel, Joseph Torry, of Revana, Portage county, Ohio, Feb. 20.

In the mode of fastening window shutters, Truman Bartholomew, of New York, Feb. 19.

In the hammer for cutting and dressing granite and other stones, Joseph Richards, of Braintree, Norfolk county, Massachusetts, Feb. 20.

In the manufacturing or preparing cotton yarn wicks, used in making candles, George Dickinson, of New York, Feb. 21.

In the spiral water wheel, James Kelly, of Jackson county, Ohio, Feb. 21.

In the mode of purifying water, Christopher Hall, of Norfolk, Virginia, Feb. 22.

In the thrashing machine, Edmund Warren, of New York, Feb. 22.

In cast iron window sashes, Isaac M'Nara, of Stafford, Tolland county, Connecticut, Feb. 23.

In steam boilers for using stone coal, James G. Wilson, of New York, Feb. 22.

In the machine for spinning wool, flax, and hemp, Theodore Thomas Abbot, of Greenland, Rockingham county, New Hampshire, Feb. 26.

In manufacturing shovels, Elizabeth H. Bulkeley, Colchester, Connecticut, widow of Chauncey Bulkeley, deceased, Feb. 28.

New Patents Sealed in 1828.

[*Owing to His Majesty's Indisposition, the Sign Manual could not be obtained to any Papers of a private nature since August, until within these few Days; consequently no Patents have passed the Great Seal this month.*]

METEOROLOGICAL JOURNAL, for October and November 1828.

1828.	Thermo.		Barometer.		Rain in inches.	1828.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low	High.	Low.			Hig.	Low	Hig.	Low.	
Oct.						Nov.					
26	53	31	30,22	30,16		11	34	23	29,56	29,84	
27	54	46	30,11	30,09		12	37	*12	29,56	Stat.	
28	53	46	30,36	30,32		13	47	26	29,69	Stat.	
29	53	33	30,38	30,30		14	50	33	29,69	29,33	
30	47	35	30,24	30,32		15	51	40	29,33	Stat.	,9
31	49	27	30,22	Stat.		16	53	41	29,30	29,22	,325
Nov.						17	50	44	29,71	29,50	
1	54	38	30,20	30,16		18	47	37	29,86	29,83	,25
2	55	43	30,17	30,16		19	48	34	29,96	29,82	,075
3	50	34	30,26	30,22		20	52	39	30,06	29,96	
4	50	32	30,18	30,12		21	54	46	29,92	29,87	
5	46	30	30,11	Stat.		22	50	47	29,77	29,76	
6	49	30	30,06	30,03		23	49	29	29,91	29,85	,1
7	50	37	29,96	29,90		24	52	32	29,72	29,66	,05
8	40	33	29,89	29,83		25	53	33	29,86	29,82	
9	47	28	29,70	29,66							
10	39	27	29,49	29,48							

* The extreme cold of the morning of the 12th, when the Thermometer was 20° below the freezing point, is worthy of particular remark.

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37' 32" N. Long. 3' 51" W. of Greenwich.

CELESTIAL PHENOMENA, FOR DECEMBER 1828.

D.	H.	M.	S.	
1	0	0	0	☉ before the Clock 10′ 38″
3	13	0	0	♀ in conj. with λ in Virgo.
3	13	0	0	☾ in conj. with ♀ long. 2° in Libra.
				☾ lat. 1° 27′ N. ♀ lat. 2° 8′ N. diff. lat. 41′
3	16	0	0	☾ in conj. with λ in Virgo.
4	6	0	0	☿ in conj. with 4 ζ in Libra.
5	0	0	0	☉ before the Clock 9′ 1″
5	1	0	0	☾ in conj. with 4 ξ in Libra.
5	3	0	0	☾ in conj. with ☿ Long. 22° in Libra.
				☾ lat. 3° 9′ N. ☿ lat 2° 8′ N. diff. lat. 1° 1′
5	10	0	0	☾ in conj. with β in Libra.
6	16	14	0	Ecliptic conj. or ● new moon
9	17	0	0	♀ in conj. with ♃ long. in ☿ lat. ♃ lat. diff. lat.
9	21	0	0	☽ in conj. with β in Capri.
10	0	0	0	☉ before the Clock 6′ 48″
10	6	0	0	♀ in conj. with 1 β in Scorpio.
10	6	0	0	☿ in conj. with 2 β in Scorpio.
11	10	0	0	☿ in conj. with ν in Scorpio.
11	22	0	0	☽ in conj. with δ in Aquarius
12	12	0	0	♂ in conj. with λ in Aquarius
13	9	39	0	☽ in □ first quarter.
13	11	0	0	♃ in conj. with 1 β in Scorpio.
13	12	0	0	♃ in conj. with 2 β in Scorpio.
15	0	0	0	☉ before the Clock 4′ 25″
15	1	0	0	☽ in conj. with ε in Pisces.
15	21	0	0	☽ in conj. with ο in Pisces.
18	19	0	0	☽ in conj. with 1 δ in Taurus
18	20	0	0	☽ in conj. with 2 δ in Taurus
20	0	0	0	☉ before the Clock 1′ 58″
20	7	0	0	♃ in conj. with ν in Scorpio.
20	18	28	0	Ecliptic opposition, or ○ Full Moon.
21	1	0	0	♂ in conj. with φ in Aquarius
21	7	22	0	☉ enters Capri.
23	6	0	0	♀ in conj. with B in Oph.
24	3	0	0	☾ in conj. with 1 α in Cancer
24	4	0	6	☾ in conj. with 2 α in Cancer
24	21	0	0	☾ in conj. with ξ in Leo.
25	0	0	0	☉ before the Clock 32″
25	2	0	0	☽ in conj. with ο in Leo.
25	12	0	0	☾ in conj. with π in Leo.
26	17	0	0	♀ in conj. with 1 β in Scorpio.
26	17	0	0	♀ in conj. with 2 β in Scorpio.
28	0	0	0	♀ in conj. with ν in Scorpio
28	22	41	0	☾ in □ or last quarter
30	0	0	0	☉ before the Clock 2′ 59″

☽ The Waxing Moon.—☾ The Waning Moon.

Rotherhithe. J. LEWTHWAITE.

ENCKE COMET.—On the evening of the 25th, observed this Comet, in the constellation Pegasus, a little to the West of a Nebulous Star, near the nose of that Constellation.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. X.

[SECOND SERIES.]

Original Communications.

ART. XI.—ON THE LAWS RELATIVE TO PATENTS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—It gives me great pleasure to find, by your valuable Journal of this month, that I do not stand alone in the ideas which I have formed of the existing Patent Laws; I cannot, however, agree with Vindicator, in his views of justice and propriety in Patent grants. I will endeavour to argue that point with Vindicator upon his own grounds. He says, that according to my notions, a separate court, constituted to judge on these points, would refuse *protection* to two-thirds or three-fourths of those who apply for it; on the grounds, that applications are made upon frivolous pretences. To this I answer, certainly it ought to be so; namely, that when an application is made to his Majesty for his Royal Letters Patent, (not a trivial document, but one of high import, with the great seal of the realms affixed to it) as a reward for a pretended valuable discovery, and which pretence is frivolous, it ought not to be granted; not because that court is in any way to rule the actions of the applicant, but because I can find no other way to prevent innumerable applications for absurd and frivolous pretensions of valuable discoveries, in case the expences were greatly reduced.

I am totally at a loss upon what reasonable grounds Vindicator can state, that when an applicant represents to the king that he is in possession of a secret, which, when made known to his Majesty's subjects at large, will prove of great national and individual advantage, he does otherwise than propose a bargain with the king. "If your Majesty will allow me the monopoly of this discovery by Royal Letters Patent for fourteen years, I, on my part, will make a full disclosure thereof, in such manner, that after the fourteen years shall be expired, this valuable discovery shall belong to the nation at large."

Although the petition for a Patent is not so worded, yet this is the real meaning of it. Now, if the king finds, through the investigation of his commissioners, that his subjects will be no gainers by it, and therefore declines the bargain, according to Vindicator's ideas, it is to be considered as the *ne plus ultra* of legislative arrogance? indeed, the granting or not granting a Patent forms, in my opinion, no part of legislation; and I cannot see how the nation, or any individual, can suffer from the measures I have suggested, except a fear be entertained that the kind of court which I recommend, would either willingly or ignorantly do injustice to the applicant, and which I do not fear in the least, if properly constituted. Let Vindicator reconsider this point, and also figure to himself the expenses of Patents greatly reduced, (which we both think very desirable), and further, that according to his wishes, unlimited numbers of Patents be granted; what a confusion of Patent rights, quarrellings and litigations, would be its result? Every thing would be patented. Not a sign-board in the kingdom, but would bear his Majesty's coat of arms; and the system of Patents would be more perplexed than ever.

It is true, Vindicator says, that unlimited protection should be given to *bona fide new discovery*. Now, I beg Vindicator will have the goodness to inform me, through your next number, (if you will be so kind as to allow it) in which way it may be ascertained that the assumed discovery is *bona fide* new? Who is to judge this point, if no competent judges are to be allowed?

The communication from your correspondent, Mr. J. Rayner, upon the subject of Patents, is so much in accordance with my own feelings on this subject, and which are already before the public, that I dare hardly express the sentiments I entertain of that gentleman's good sense and understanding, in such terms as his judicious and ingenious observations deserve, without fear of being taxed with too much *amour propre*. The discerning and enlightened part of the public will, however, not fail to appreciate Mr. Rayner's just remarks, without the aid of encomiums from so humble an individual as myself. I fully agree with Mr. Rayner, that the judges, although deeply learned men, are not unanimous in their conceptions of what is to be the subject of a Patent right. How can it then be expected, that a jury, and the parties interested, should understand it!

The various definitions and adapted meanings of words present unfortunately such a field for quibblings and chicanery, that what sometimes is thought clear language, may easily be turned into incomprehensible jargon. What meant Mr. Justice Heath by saying, "the grant of a method" (I suppose the word 'of' to be a misprint, instead of 'for') "is not good, because uncertain." I contend, that some methods are certain in their operations; and why shall not the discovery of a new method, if valuable and good, entitle the inventor to a Patent? Suppose the generally known method of cutting tobacco (without machinery) to be with knives, upon the principle of levers, and that I find out that by applying circular knives, it requires less power; more work can be effected in the same time than by lever knives, and at less expense—but the cut tobacco produced is just the same, neither better nor worse. Now, according to Mr. Justice Heath, the Patent would not be good, nor according to Mr. Justice Buller, because no new substance is produced! To me such notions appear truly absurd, and reflect greatly upon man's understanding. The learned judges, I hope, meant it otherwise. I have too high a sense of their general good understanding; but, as I before observed, the misfortune seems to rest in the want of proper words and language to convey their meanings, in such exquisitely delicate matters as the arts and sciences require; and which can only be known by persons who pass the greatest part of their lives in the developement and researches of these matters, both by theory and practice; and such men alone are competent to be appealed to for decision. And I further contend, that the greatest part of really valuable patents, is not for new substance produced, (by which, I guess, Mr. Justice Buller does not mean different matter, but the same sort of thing in an improved state), but for new methods of treating and operating upon various matters and substances. In short, ignorant as I am, compared with the judges of the land, I should not in the least feel embarrassed to prove the inconsistency which exists in judications of Patent rights; and I conceive, in my humble opinion, that the enactments of new and salutary laws upon that subject, would be a greater blessing to the nation, and productive of more important consequences than the greater part of the community can imagine. The laudable efforts of men, gifted with superior capacities of mind, under proper protection and support, would raise the arts beyond what now is known, and thereby increase the prosperity of their country, and deservedly raise themselves to an eminence, whence they would be beheld by their fellow creatures as ornaments to their country, and as the conspicuous mark for emulation. Such, under the present state of things, are borne down, often crippled and ruined, through the miserable system which now prevails. Happy will it be for the nation, if the administration of the country can be made sensible of the reality of these facts; and it is to be hoped that the time is not far distant when the legislature will seriously lend its ear to this subject, and will think it to be less trivial than it seems to do at present.

I remain, Gentlemen,
Your most obedient servant,
M. De Jongh.

Manchester, December 4, 1828

On the present defective state of the Patent Laws.

To the Editors of the London Journal of Arts, &c.

Gentlemen,—Observing that you have devoted a considerable space in your valuable publication to the important subject of the present state of the law for securing Patent rights, I am induced to send you a copy of a document, the substance of which was forwarded as a memorial, in the year 1825, by the Manchester Chamber of Commerce, to the present Lord Chancellor, when he filled the office of Attorney General.

Differences of opinion, as to the best means of encouraging improvements by granting Patents, are likely to exist. Two of your Correspondents propose that a court should be instituted, with power to refuse a Patent, if such court should think the discovery unworthy of one. This appears highly objectionable, as the researches and ingenuity of the whole country would then be under the controul of a few men, whose acquirements and views would, from the nature of man, be partial and limited. It has also been proposed, that Patents should be kept partially secret, in order to prevent foreigners from obtaining a knowledge of them. This appears likely to be injurious, rather than beneficial. If a native can, by paying a trifle, get a copy of a specification, such a copy may be easily handed over to a foreigner.

But the non-publication of a Patent leaves the public without the benefit of the invention, because they are ignorant of its existence; while the Patentee is left to struggle with the difficulty of making it known. At the same time, other inventors, ignorant of what has been patented, may be wasting their time and money in inventing that which has been already secured by previous Patents.

Conflicting opinions, such as these, being known to prevail, I would suggest, that if a bill be brought into Parliament to amend the law of Patent rights, a Committee should be appointed to examine witnesses, when we may presume that due weight would be given to every suggestion, and a law be ultimately obtained, that would substantially provide for the wants of the country in this important department.

I am, Gentlemen,
Your most obedient Servant,
R.

Manchester, Dec. 16, 1828.

SUBSTANCE OF THE MEMORIAL REFERRED TO.

The law of this country, by granting Patents, recognises the principle of encouraging inventions and improvements, by securing to individuals the superior profits arising from them for a certain period of time; but, in the present state of the law, there is not that encouragement afforded which, it is presumed, the case admits of.

The brilliant discoveries of a Watt and an Arkwright, have given celebrity to their names, as well as benefited their country, to an extent not easily estimated; but the number of minor improvements and inventions, made by persons actually engaged in manufacturing, although they have not arrested public attention to the same extent, are scarcely inferior in importance.

A grand and striking discovery cannot be expected to take place frequently; but to persons, regularly engaged in manufacturing, inferior improvements are constantly suggesting themselves, that would, if regularly adopted and acted upon, form collectively an important addition to our means of producing.

But the present laws affecting Patents, do not afford such encouragement and protection as to stimulate to the invention and using of improved modes.

The expenses of taking out Letters Patent are so considerable, as to prevent nearly all workmen engaged in manual employments from making the attempt. It is obvious, that, from their perfect familiarity with the present methods, from their attention being constantly directed to the subject, and from their experience of the defects of the existing modes, the operative artizans are the most likely to discover improvements; so the want of that encouragement, to invent which a Patent right gives, either prevents discovery altogether, or when made, causes it not to be acted upon. The consequence must be, that artizans are rendered comparatively careless and indifferent about improvements, and when some of them make discoveries, they are disposed to keep them to themselves, and the invention often dies with them.

An inventor is now induced carefully to conceal his improvement, until he has taken out a Patent for it; lest, by publishing it, he should lose his exclusive right to it, or lest he should be anticipated by some other person; this deters many from subjecting their inventions to the test of experiments.

The unpleasant alternative of either risking the loss of the right to a Patent, by prematurely publishing it, or of incurring the expense of a Patent before proving the invention, being all that is left to the inventor, he is often induced to decline doing either, and the invention is eventually lost. Thus inventors are frequently put to the expense of taking out Patents for valueless discoveries, which operate greatly to their discouragement, and the country is at other times deprived of the benefit that would result from valuable inventions.

It is altogether impossible for an inventor to inform himself fully of all that has been done by others, in the same process or art; and therefore it often happens, that in a Patent is included something, (perhaps of trifling importance in itself) which has been used before, although unknown to the Patentee, and this *vitiates the whole Patent.*

Such losses and disappointments are calculated to damp the ardour of ingenious discoverers.

According to the existing laws, it is supposed by some, that a Patent may be taken out and supported for a general principle: and that a subsequent Patent, by another person, for a very superior mode of applying it, cannot be sustained. This leaves Patentees exposed to actions for *having* infringed upon the principle of prior Patents.

When one Patentee imagines his Patent-right has been infringed upon by another, he can either bring an action against the offending party immediately, or he can hold out threats of doing it at a future period, when he will be able to bring it for greater damages; and thus he may, by holding out threats, either deter the second Patentee from acting upon his Patent; or, if he persists in using it, he does it under the fear of the threat being put in execution, when the damages, from the uncertain state of the law on the subject, may be ruinous.

Experience having shown the great difficulty of sustaining Patents, capitalists are deterred from purchasing Patent-rights, and poor inventors are, therefore, often left to struggle with so many obstacles as to prevent their ever obtaining any benefit from their inventions, however really valuable they might be.

In order to remedy or soften some of the evils connected with the present state of the Patent Laws, it is proposed:—

Firstly, That the expenses attending the taking out of a Patent be materially reduced by making the fees more moderate, repealing the stamp duties, and effecting such other alterations as will best attain the desired end.

Secondly, That a register be kept, in which the receipt of a packet containing a specification of the discovery may be entered at a trifling expence; and providing a Patent be taken out for the discovery within twelve months, that the Patent-right or security shall be considered as commencing from the date of the entry.

This would give time and opportunity for submitting the discovery to the test of experiment, without the expense of a Patent, or the danger of losing the power of securing one.

Thirdly, That in order more effectually to secure the right to the Patentee, a period of six months, from the date of the entry in the register, be allowed for erasing anything in it that may be old or useless, and the parties opposed to the Patent be required in that time to point out and protest against such parts as being old, or as being useless; but in the event of any part not being pointed out in the six months, but subsequently found to be old and useless—then such parts, not to vitiate the remainder of the Patent.

Fourthly, That Patent-rights be restricted to particular and specific applications, and not be extended to general principles, and the invention to be described in such a manner, that a good workman in the trade, to which the invention belonged, would be thereby enabled to act upon the improvement.

Fifthly, That a Patentee having reason to believe that another Patentee intends to bring an action for the infringement of his prior Patent, shall, by giving him notice, and furnishing him with opportunities of proving by inspection, whether it be an infringement or not, compel the party supposed to be infringed upon to commence his action within any certain number of months, from the date of the notice, or to lose his right of action and all claim for damages, for the continuation of the supposed infringement, after notice had been thus given.

ART. XIII.—ON THE GRADUATER, AS APPLIED IN THE PROCESS OF SPINNING AND ROVING COTTON, WORSTED, FLAX, &c. &c. &c. BY J. RAYNER, ESQ.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—The method of spinning yarn or thread by rollers, was first introduced by Sir Richard Arkwright, and the process adopted by him has opened one of the most opulent branches of manufacture that this country has ever known. The very elegant and effective machinery that abounds in the large spinning establishments of Lancashire and Yorkshire have, in their construction, called into action the highest mechanical talents and ingenuity.

The fact of yarn or roving being delivered from the rollers under given data, and after twisting, being wrapt or coiled on a cylindrick bobbin, through the medium of the spindle and flyer, has originated the necessity of graduating the speed of the bobbin, so that the operation should be of uniform and equal tension throughout the entire process of filling the bobbin, and this was obviously more needful in making soft and fine roving, and in spinning yarns of delicate texture.

The *Graduaters* first adapted, were rude and imperfect; but experience and a better acquaintance with the subject, suggested from time to time, various ingenious inventions to accomplish this end, viz.—to graduate the speed of the bobbin, in the ratio of its increasing circumference, by the addition of successive layers of yarn or roving, coiled on the bobbin, as the process proceeds.

It is not my intention to describe the various inventions alluded to, for however different in their construction, they all proceed with the same object in view, and combine the same elementary considerations. The frustum of a cone has, perhaps, been the most favourite *graduater*, and has been more extensively applied than any other; and to this in particular, my observations are intended to apply.

Being engaged some years ago in the construction of machinery of this description, the question came before me, connected with many interesting considerations, and I was induced to investigate the subject, particularly with a view to a general rule applicable to cases of this description; and it is presumed, that the theorems annexed, are founded on just principles, which are correctly applied to the case before us.

The first approach to this question may appeared involved, and the several considerations that apply to the solution necessarily render it complex; but it is hoped, that the method of treating the subject here adopted will render more distinct and tangible, the general principles on which the solution of such questions ought to proceed.

The general theorems, with the demonstration and the examples in illustration, will shew its easy application to any particular case. To the practical mechanic, it will supply a ready means of calculation; and those acquainted with the higher branches of mechanical science may not be displeased to see the intimate connection of abstract science with practical and operative mechanism. Should you concur in thinking this communication may be useful to some of your numerous readers, it is at your service for insertion in the London Journal of Arts, &c. &c.

I remain, Gentlemen,
Your most obedient servant,
J. Rayner.

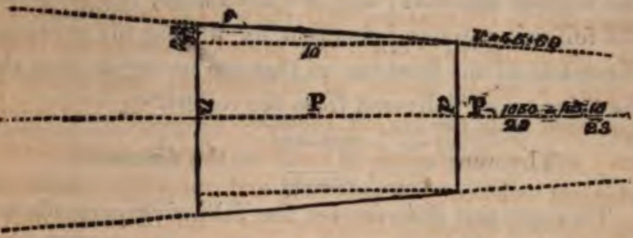
December 17, 1828.
King Square, Goswell Road, London.

These theorems apply to the frustum of a cone, acting on a cylinder, through the usual medium of a strap or band, and it is assumed, that the machinery is so arranged, that the first speed of the bobbin shall be accurately provided for in the roving or spinning machine to be constructed, and the following particulars must also be determined upon as data for the calculation.

1. The diameter of the delivering roller.
2. The quantity of twist or number of revolutions that the spindle shall make to one of the delivery roller.
3. The thickness of the roving or yarn to be spun.
4. The diameter of the bobbin on which the said roving or yarn is to be wrapt or coiled.
5. The first diameter of the frustum must be taken as known, also its length or height.

6. The numbers of layers of roving or yarn to be coiled on the cylinder or barrel of the bobbin, so that its extreme size may be taken, if wanted. These particulars being arranged, we proceed to state the general principles, and to apply the data by way of examples.

Let the black line of the Figure below represent the frustum of a cone.



Then take d = the small diameter of the frustum = 6

n = the large diameter = 7·314

v = the slant side of the cone = 45·69

P = the perpendicular altitude of the cone

$$= \frac{1050}{23} \text{ or } 45\frac{15}{23}$$

= 10 the height or length of the frustum.

Then by similar triangles we have the following proportions:

$$\text{As } \tfrac{1}{2}\, d : v : : \frac{n-d}{2} : \frac{n-d}{d} \times v$$

$$\text{and as } \tfrac{1}{2}\, d : \text{P} : : \frac{n-d}{2} : \frac{n-d}{d} \times \text{P}$$

and as $\frac{n-d}{2} : 10 : : \tfrac{1}{2}\, d : \text{P}$, the altitude of the cone.

Put a = the circumference of the front or delivering roller = 3·927

t = the twist, or number of turns the spindle makes to one of the front rollers

r = to twice the thickness of the roving or yarn

b = the circumference of bobbin cylinder = 3·1416

d = the assumed diameter of the frustum = 6
c = the value of each coil, or number of layers of yarn or roving.

Then we shall have $t - \frac{ra}{\overline{r+c-1}\times b}$ = the speed of the bobbin cylinder; and as $t - \frac{r\,a}{\overline{r+c-1}\times b} : d :: \frac{r\,a}{\overline{r-2c-1}\times b} : d'$ the second diameter; and we shall have, from this data, the following general theorem for finding the successive diameters of the frustum, so that the roving or yarn shall be *taken up* as delivered from the rollers.

Theorem $\frac{\overline{r+c-1}\times 4td-5dr}{\overline{r+c-1}\times\overline{4t-5}}$ = the diameters.

To apply this theorem let the following particulars be assumed. For example, $t = 5$ the twist; $r = \frac{1}{12}$ twice the thickness of the roving or thread; $d-6$ first diameter; c = any number from 1 to 24.

Per theorem $\frac{\overline{r+c-1}\times 4td-5dr}{\overline{r+c-1}\times\overline{4t-5}} = \frac{\overline{12+1-1}\times 120-360}{\overline{12+1-1}\times\overline{20-5}} = 6$, the first diameter of the frustum, or $\div\ 15\Big)\frac{\overline{12+1-1}\times 120-360}{\overline{12+1-1}\times\overline{20-5}} = \frac{1440-360}{180} = \frac{96-24}{12} = 6$, the first diameter; and in this case 8 will be a common difference for the dividend, and 1 for the divisor; as 12)72(6, first diameter

Add 1 8

13)80(6·15, second diameter

Add 1 8

14)88(6·28, &c. &c. Thus the successive diameters are found from 1 to 24, assumed as the limit, or to any extent to which it may be desirable to fill the cylinder of the bobbin. Any diameter may be found by the theorem taking *c*, at the value wanted, as per example in the 24 coil or covering of roving.

$$\frac{\overline{r+c-1}\times 4td-5dr}{\overline{r+c-1}\times\overline{4t-5}}=\frac{\overline{12+24-1}\times 120-360}{\overline{12+24-1}\times\overline{20-5}}=\frac{3840}{525}=7\cdot314,$$ the large diameter of the frustum.

To find the height or space to be moved over on the frustum by the strap or band, for each coil or covering of yarn or roving, we shall have, from the data given,

$$\frac{\overline{r+c-1}\times 4td-5dr-d}{\overline{r+c-1}\times\overline{4t-5}}\times P=\left(\frac{\overline{r+c-1}\times 4t-5r}{\overline{r+c-1}\times\overline{4t-5}}\right)-1\times P=\frac{5c-5}{\overline{r+c-1}\times\overline{4t-5}}$$

$$\times P=\frac{\overline{5c-5}\times P}{\overline{r+c-1}\times\overline{4t-5}}=$$ the height of each move on the surface of the frustum. To apply this theorem with the given data,

$$\frac{5c-5}{\overline{r-c-1}\times\overline{4t-5}}\times P=\frac{5c-5}{c+11\times 15}\times P=\frac{c-1}{3c+33}\times P$$

$$\div 3\frac{c-1}{3c+33}\times\frac{1050}{23}=\frac{c-1}{c+11}\times\frac{350}{23}=\frac{350c-350}{23c-253}=276,$$ first divisor, and 23 and 350 will be the uniform differences for the divisor and dividend, by which the corresponding height of any move on the frustum of the cone may be found, so as to exactly *take up* the roving or yarn, as delivered from the rollers.

First divisor, 276)000(000
Add 23 350

299)350(1·17, space moved over for the second coil of roving.
Add 23 350

322)700(2·17
23 350

345)1050(3·043, &c. &c. &c. to any extent, *ad infinitum*. Any separate shift or move of the strap or band may be determined by this theorem, in proportion to the number of coils of covering of the yarn, and *c*, may be taken of any value; for example, for the 24th coil, $\dfrac{\overline{5c-5} \times P}{\overline{r+c-1} \times 4/5} = \dfrac{\overline{5 \times 24-5} \times 45\frac{15}{23}}{\overline{12+24-1} \times \overline{20-5}} = \dfrac{5250}{525} = 10$, the space to be moved over for the 24th coil, any other being found by taken c, at the value required.

OBSERVATIONS.

The data from which these conclusions are deduced may be varied at pleasure, and t, d, r, a, b, d, and n, take of any value at the option of the mechanist. Some of them, however, must be determined as before stated, and the rest found, as per the examples herein given.

In this data, it is assumed that the rollers, bobbins, &c. &c. are all perfectly true, and the dimensions accurately determined, and the thread or yarn is supposed to be inflexible and limited to the particular data taken as the value of r.

These theorems proceed upon the application of the frustum of a cone operating upon and moving a cylinder of uniform diameter throughout its length, by the intervention of a strap or band; but should my leisure permit, I will shew the application of the same principles to the double frustum, by which the strap or band is kept at a uniform tension, without the assistance of any straining apparatus.

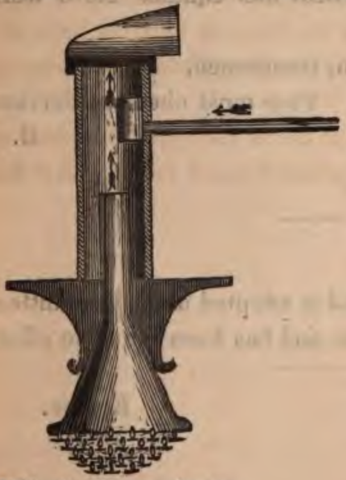
I make no apology for the use of the term "Graduater;" it appears the most appropriate I could select, and it does not need explanation.

ART. XIV.—ON A SIMPLE MODE OF VENTILATION.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—There is hardly any subject in domestic economy of so much importance, on the score of health and comfort, as ventilation. This matter is, however, but little attended to in our larger edifices, where it is especially needed. We frequently see two or three thousand persons assembled in the same saloon, vitiating and destroying the purity of the atmosphere, by the ordinary process of respiration; and the only mode of renovating it consists in occasionally opening a door or window. These form so many large valves for the ingress of the air in immense masses, instead of being broken and distributed over the apartment to be purified.

I do not, in the present case, intend to examine the processes that may be advantageously resorted to for ventilating a small apartment; but must confine myself to a graphic illustration of the application of a large central chandelier, such as is used in our Theatres, and at the Guildhall festivals in the metropolis.



The common gas-burners or candles are represented at the bottom of the invented funnel, and by the diminished specific gravity of heated air, an upward current must result. The stream of air, on entering the larger tube or chimney, produces a partial rarefaction by the friction of the particles, and their primary impact.

A small horizontal tube is seen to enter the chimney, and this may be conveyed to any distant part of the building intended to be ventilated; the suction that results will thus draw off the impure or vitiated air. A new supply will immediately enter to restore the equilibrium.

It will thus be seen, that the chandelier offers a threefold advantage. The house is illuminated, the upward current of air will continually carry off that which is deteriorated beneath, and a forced ventilation, similar to that of the Marquis de Chabannes, is effected in the side pipes.

I have, Gentlemen, particularly called your attention to this important subject at the present moment, on account of the absurd clamour that has been raised against the use of gas in our metropolitan theatres. I have no hesitation in asserting that Covent Garden Theatre, when its atmosphere was most tainted with gas, was better calculated for carrying on the process of respiration, than it was prior to its introduction. But we are not called upon to bear with a minor inconvenience to prevent a greater, as the central chandelier will be found as free from smell, when attended with ordinary care, as the best wax candle. As a well-wisher of science,

I remain, Gentlemen,
Your most obedient Servant,
B.

Wymondly, Dec. 1828.

A contrivance of this kind is adopted in the Committee-room of the Society of Arts, and has been found to afford very considerable relief.

EDITOR.

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ASTOR, LENOX
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Steenstrup's Propelling Machinery.

Fig. 1.

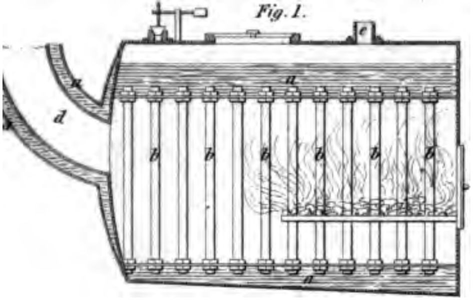


Fig. 2.

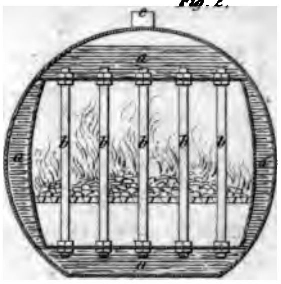
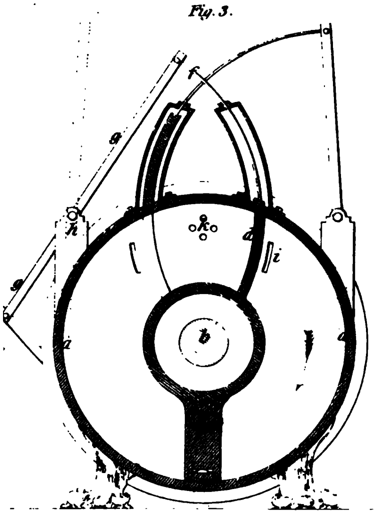
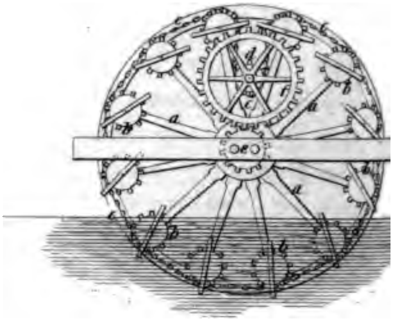


Fig. 3.



Downe's Impd Water Closet.

Fig. 4.



Busk & Westley's Flax dressing Mach.

Fig. 5.

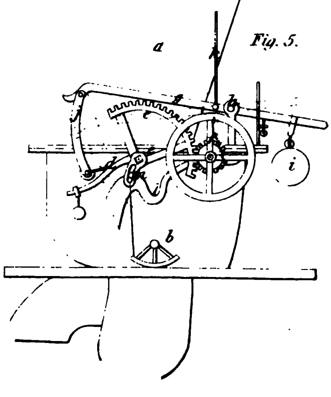
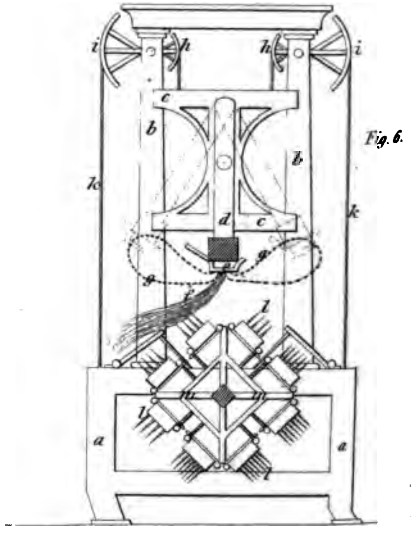


Fig. 6.



Recent Patents.

To **Paul Steenstreep,** *of Basing Lane, in the City of London, Esq. for his Invention of certain Improvements in Machinery for Propelling Vessels, which improvements are applicable to other purposes.* [Sealed December 11, 1827.]

The novelties of invention proposed under this Patent consist of three distinct features; first, an improved construction of boiler or generator for the production of high pressure steam; secondly, a novel arrangement of some of the moving parts of a rotatory steam engine; and thirdly, a peculiar mode of constructing and working rotatory paddles for propelling vessels on water.

The boiler or steam generator is made by placing a series of perpendicular tubes within nearly a cylindrical vessel, the upper and lower ends of which tubes are made to open into water chambers, for the purpose of allowing the water of the boiler to pass freely through them; and in the midst of the ranges of tubes, the furnace is stationed: in order to allow the flame and heated vapour to act upon the greatly extended surface of boiler thus formed, by the tubes and other water chambers.

Plate VII. Fig. 1, is a longitudinal section of the boiler; fig. 2, is a transverse section of the same. The outer surface of this boiler, which is proposed to be formed nearly cylindrical, is made of plate iron; two thicknesses being adapted by riveting together, so as to produce passages for water chambers, *a*, *a*, *a*, surrounding the boiler on all sides, except the front; *b*, *b*, *b*, are the tubes open both at

top and bottom; *c*, is the furnace from whence the flames wind round the tubes, and the smoke escapes at the chimney *d*. The water is to be kept sufficiently high in the boiler to cover the tops of the tubes; when the ebullition produced by the action of the fire will cause the steam to rise from the tubes into the upper chamber, and from thence to pass through the pipe *e*, for the purpose of working the engine. As the tubes will elongate and contract, according to the variations of temperature, it is proposed sometimes to cross them at the top in curved directions, instead of carrying them up straight.

The rotatory steam engine, which forms the second feature of this Patent, is shewn in section at fig. 3. It consits of a cylinder *a*, *a*, very accurately bored, in the axis of which is the rotatory shaft *b*, carrying the leaf or piston *c*, which is properly packed on its outer edge, and two ends, by straight pieces of metal, let into grooves with springs at their backs pressing outwards, for the purpose of keeping the metallic packing close against the internal periphery of the cylinder, so as to render it perfectly steam tight; *d*, is a steam stop, sliding up and down in the box *e*, and in grooves formed in the ends of the cylinder. This steam stop is curved, and at its outer edge there are attached curved rods *f*, passed through the box *e*, and the extremity of these rods are connected to the upper ends of the larger arms of the lever *g*, which turn upon their fulcrum pins or axle in the ears *h*, affixed to the outside of the cylinder. The lower or shorter arms of the levers *g*, are connected to a crank on a small axle detached from the engine, mounted in standards set on the ground, near the end of the cylinder.

Steam being conducted from the boiler, as above-described, through a pipe, is admitted into the engine at the slit or induction aperture *i*, when exerting its elastic force against the stop *d*, and against the leaf or piston *c*; the leaf and the main axle *b*, will be driven round the cylinder in the direction of the arrow, communicating rotatory motion to the central axle, with power to drive other machinery.

On the main shaft *b*, near the end at the outside of the cylinder, there is a toothed wheel taking into another wheel, which slides loosely upon the detached crank axle before-mentioned; the power of these wheels, as the main shaft revolves, turns the latter, and at the moment that the leaf *c*, comes up to the back of the steam stop, a tappet or cam on the loose wheel strikes the crank shaft, and turns it quickly round; the effect of which is that the lever *g*, is suddenly thrown back into the situation shewn by dots, and as suddenly returned again; by which action of the lever *g*, the steam stop *d*, is drawn up, to let the leaf or piston *c*, pass, and instantly returned again to its place, forming a steam stop as before. The steam before the piston is now let off through the eduction aperture *k*, and the fresh jet admitted as soon as the piston has passed the induction aperture, drives it forward as before; the dead point being overcome by a fly-wheel, or by the paddle wheels, which are proposed to be attached to the main shaft of the engine.

It is proposed, that in this engine the steam shall be employed expansively; the supply at the induction aperture is therefore cut off, when the piston has performed a certain part of its rotation; this is effected by any of the ordinary methods of working the induction valves or steam cock, and the eduction or discharge of the steam is by similar means.

It may be necessary occasionally to change the directions of the rotatory axle, as in the case of turning the paddle wheels backward, in stopping the progress of a vessel. For this purpose two steam stops are provided, with their rods and levers exactly alike, as exhibited in the figures; that which is out of operation not being lettered. The lever of this last mentioned steam stop is connected to a crank shaft, at the reverse end of the engine, and is (when put into gear) driven by wheels in the same way. The gearing of these shafts to the working parts of the engine are effected by clutch boxes, which are readily slidden to and fro by a hand lever; when one is in gear, the other must be thrown out.

The third feature of invention proposed under this Patent, is a peculiarly constructed propelling wheel, the paddles or float boards of which are individually mounted upon axles, and are made to revolve independently of the wheel, for the purpose of bringing the floats or paddles into such positions as shall be most conducive to their passing into, and out of the water, with the least possible resistance. This is effected by turning the paddle half round upon its axis, during the time that the wheel performs one entire revolution upon its shaft.

There are two methods proposed of accomplishing this; the first of which is shewn at fig. 4. The contrivance is connected to a series of radial arms *a*, *a*, *a*, with forked ends. These forks hold the plumber blocks, that the pivots of a series of spur wheels *b*, *b*, *b*, are mounted in, and to the axles of these severally the float boards or paddles are affixed; and to the extremities of the arms, a circular rim is attached, for the purpose of supporting and bracing the arms tightly together.

The paddle wheel is put in rotatory motion, by the power of the steam engine applied to its shaft, which being made to revolve, carries the paddles round with it. In order, however, that the paddles should assume certain positions as they revolve, the spur wheels *b*, are all connected together by the gearing of an endless chain *c, c, c,* passed tightly round them, and round a similar wheel *d,* which is their driver. Opposite the centre of the paddle wheel axle, there is a pinion *e,* fixed either to the side of the vessel or to a beam. This pinion takes into a wheel *f,* of twice its diameter on the axle of the driving wheel *d,* which is mounted in bearings affixed to two of the arms of the large wheel. As the large wheel *a,* goes round, carrying the small wheel *f,* with it, the stationary pinion causes the wheel *f,* to perform half a revolution upon its axle to every entire revolution of the paddle wheel; and the small driving wheel *d,* on the same axle, moving with the same velocity, traverses the chain *c,* and causes the spur wheels *b,* with the paddles to turn half round a revolution, while the large wheel carries them through one entire circuit.

By this contrivance, it will be seen that all the paddles, as they revolve, assume the positions shewn in fig. 4, constantly pointing to that part of the large wheel which is uppermost, consequently they enter the water edgewise, and pass out of it in the same way, making the least possible resistance against the water in a perpendicular direction, and giving the most effective stroke in the horizontal or propelling direction.

Another mode of effecting the same object is by employing one large concentrix toothed wheel, instead of the chain, to drive all the small wheels which are connected to the axles of the several paddles. This large toothed wheel turns loosely on the main axle, and being driven by a gear chain and stationary wheel, much in the same way as above described, performs a very slow retrograde motion on its axis, while the paddle wheel is carrying it rapidly round; and hence, by gearing into the teeth of the small wheels, causes them to make half a revolution on their axles in the same time that they are carried through an entire circuit by the great wheel.

In recapitulating the leading features claimed under this Patent, viz. the boiler, the engine, and the paddles, we are compelled to say, as to the first, "*the improved boiler*," we see little or no difference, either in principle or construction, between this and other boilers constructed of tubes; we particularly refer the reader to Clark's boiler, Vol. VI, (First Series of this Journal), page 57, and Plate III. As to the second, the "*improved rotatory steam engine*," the feature of peculiarity in this is the curved form of the steam stop, and the modes of working it; the other parts are common to most rotatory engines. Thirdly, the improved paddle wheel has the same object as Broomfield and Luckock's Patent for improvements in propelling vessels. See Vol. XI. page 79; and Oldham's Patent for the same purpose, Vol. XIV. page 1. The present invention, therefore, can only be considered as another method or contrivance for causing the paddles to revolve in the same positions.—[*Inrolled June*, 1827.]

To WILLIAM DOWNE, *the Elder, of Exeter, in the County of Devon, Plumber and Brassfounder, for his Invention of certain Improvements in Water Closets.* [Sealed 25th August, 1826.]

THE water closet which forms the subject of this Patent, is of the kind commonly denominated self-acting, that is, calculated to empty and cleanse itself, without the necessity of drawing up a piston, or moving a lever by hand; as in most of the water closets of the ordinary construction. The earthen basin or pan delivers the soil and water at bottom, through a valve, into an iron box, from whence it passes into the discharge pipe as usual, which communicates with the common sewer, or other receiver; and above is a cistern of water, having a pipe leading to the basin for the purpose of washing it clean.

The mechanism by which the valve is worked, that discharges the soil from the basin, is not very different from that usually adapted to the same purpose in other water closets. It is, however, rather more complicated, as its object is not merely to open the dish, but also to keep it open a certain time, while the descending stream of water washes away the soil from it, and afterwards to close it again, so as to form an air tight valve, in order to prevent any effluvia from rising through the aperture.

Plate VII. fig. 5, represents the water closet, divested of its case; that is, the seat and frame-work removed; *a*, is the basin; *b*, the iron box, called the container, into which the soil is discharged, through a valve or lever dish acting at the bottom of the basin; *c*, is the axis of this lever dish, upon the end of which a weighted lever *d*, is fixed, for the purpose of keeping the lever dish closed, that is, holding it up against the bottom of the pan. To the end of the axle of the dish there is also affixed a toothed sector *e*, which takes into a pinion, on the side of a small fly wheel, *f*. Above these works there is a long lever *g*, mounted upon a fulcrum standard *h*, weighed at one end, as *i*, and at the other end carrying a link or stirrup *j*; this lever is acted upon by a pushing rod *k*, connected to the seat of the water closet; so that whenever a person sits down, the longer arm of the lever *g*, is depressed by the descent of the pushing rod *k*; and when the person rises again from the seat, the lever rises also, by the gravity of the weight *i*, at the shorter end.

There is a bent lever *l*, (which, for distinction, we will call a crane necked lever.) The fulcrum of this lever is upon the axle of the fly wheel *f*, and turn loosely round it. When the long arm of the lever *g*, is depressed by the person sitting upon the seat as above said, the link or stirrup passes over the nib of the crane necked lever *l*, and rests there, as shewn by dots, until the person rises from the seat, which allows the pushing rod *k*, and the longer arm of the lever *g*, to rise again into their former positions. The link or stirrup *j*, now having hold of the crank necked lever, as the longer arm of the lever *g*, rises, it lifts the crane necked lever also, which being connected by a link *m*, to the axle *c*, of the lever dish, causes the lever dish to be opened, and consequently the soil which passed from the basin to be delivered to the container, and thence to the trap and discharge pipe below.

The rotatory movement thus given to the axle of the lever dish turns the toothed sector *e*, fixed to its axle, and this taking into the pinion, turns the fly wheel *f*, also. When the longer arm of the lever *g*, has risen nearly to its highest elevation, the nose of the crane necked lever, (which is an inclined plain) slips out of the link or stirrup *j*, and permits the weighted lever *a*, to descend, the toothed sector at the same time rises, and the teeth of the pinion turns the fly wheel in the opposite direction to that in which it revolved before. The particular object of this is, that the lever dish may not close suddenly, but gradually, governed by the rotation of the fly wheel, in order that sufficient time may be allowed for washing the dish perfectly clean from the soil.

There is a wire *n*, connecting the crane necked lever with a crank *o*, from which crank another wire passes to the valve of a cistern above, so that as the crane necked lever is rising, water may be allowed to flow through the cleansing pipe into the basin. [*Inrolled February*, 1827.]

To **Robert Busk** *and* **William King Westly,** *of Leeds, in the County of York, Flax Spinners, for their Invention of certain Improvements in Machinery, for heckling or dressing, and for breaking, scutching, or cleansing hemp, flax, or other fibrous substances.* [Sealed 29th August, 1826.]

This invention consists in a certain arrangement of machinery for breaking and heckling flax and hemp, containing two particular features of novelty ; the first of which is designed to give a pendulous motion to the strick of flax or hemp, by means of a vibrating frame, in which the strick of flax is suspended, for the purpose of drawing it to and fro through the heckles : the second is the construction of a frame, in which several series of heckles are mounted, with points of different fineness, the frame being moveable upon an axle, for the purpose of changing the heckles when required.

Plate VII. Fig. 6, represents a section of the machine ; *a*, *a*, is one of the end frames, upon which are erected the pillars or standard *b*, *b*, made fast by the cross piece at top ; *c*, *c*, is a frame which slides up and down on the pillars *b*. There is a similar sliding frame at the reverse end of the machine ; and these, by means of arms *d*, carry the holder *e*, in which the strick of flax *f*, is suspended.

The machine is to be of any width that may be necessary for holding several stricks of flax or hemp, and motion being given to the frame *c*, and arm *d*, at one end, the strick *f*, will be drawn to and fro through the heckles, the holder moving in the curved course shewn by dots at *g*, *g*.

The sliding frame is suspended by cords or chains, attached to its upper rails, which are passed over small quadrants *h, h,* and at the reverse end of the levers which support these, are the longer quadrants *i, i,* having cords or chains, and rods *k, k,* with adjustable weights at their lower extremities, balancing the weight of the sliding frame.

In order to produce the up and down motion of the sliding frame *c,* and at the same time the vibrating motion of the arms of the holder, rather a complicated system of wheel work is introduced, consisting of excentrics and pinions, working round the internal paripheries of toothed rims. The Patentees, however, do not confine themselves to any precise mode of actuating the apparatus, but claim any contrivance by which the frame *c, c,* may be slidden up and down, and the arms *d,* of the holder *e,* swung to and fro.

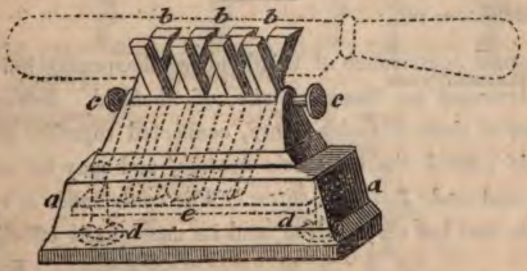
The heckles *l, l,* are set in rows upon a frame *m, m,* each being mounted upon hinges, on one side, and with adjustable screws at the other side, by which the points may be raised or depressed, so as to take more or less hold of the flax; and *n, n,* are guide boards, or flaps over, which the ends of the flax pass.

When the flax has been sufficiently acted upon by the first series of heckles, and the guide boards or flaps raised upon their hinge joints, the heckle frame may be turned round on its axis, and finer heckles brought into operation. The flaps being then placed again, as in the figure, the operation may be resumed.

It is stated, that by this machine stricks of flax or hemp may be more conveniently and effectively heckled and cleansed, from the boom and other woody matter, than by any other machinery heretofore known; and that the tow collected in the heckles, will bear a much smaller proportion to the quantity of flax so dressed, than by hand heckling; consequently a great saving will be effected by the increased quantity of clean flax thus produced. [*Inrolled February*, 1827.]

To Francis Westby, *of Leicester, Cutler, for his Invention of certain improved Apparatus, to be used for the purpose of whetting or sharpening the Edges of the Blades of Knives, or other cutting Instruments.* [Sealed 6th May, 1828.

An apparatus for sharpening edge tools, by means of two grooved steel cylinders, was the subject of a Patent granted to J. Felton, in June, 1827 (see the 1st Vol. of the present Series of our Journal, page 41.) The invention now before us is upon the same principle, but different in form. It consists of a box containing several straight bars of steel, with file edges, which are fixed at acute angles crossing each other; and the knife intended to be sharpened, being drawn to and fro with its edge downwards, touching the angles at which the steel bars meet, will become sharpened by the operation of filing.



The accompanying figure shews the apparatus in perspective; the dotted lines representing the parts within;

a, a, is the box or case, containing the steel bars *b, b, b,* which are placed alternately at opposite angles crossing each other. These bars are held fast by the screws *c, c,* which pass through the ends of the box, and bear up against the sides of the two outer bars, confining them all firmly in their places.

The edges of the steel bars are cut with fine grooves, extending lengthwise; and the knife introduced between the angles of the bars, being drawn to and fro, receives the operation of filing to a fine angular edge, which renders it thin and sharp.

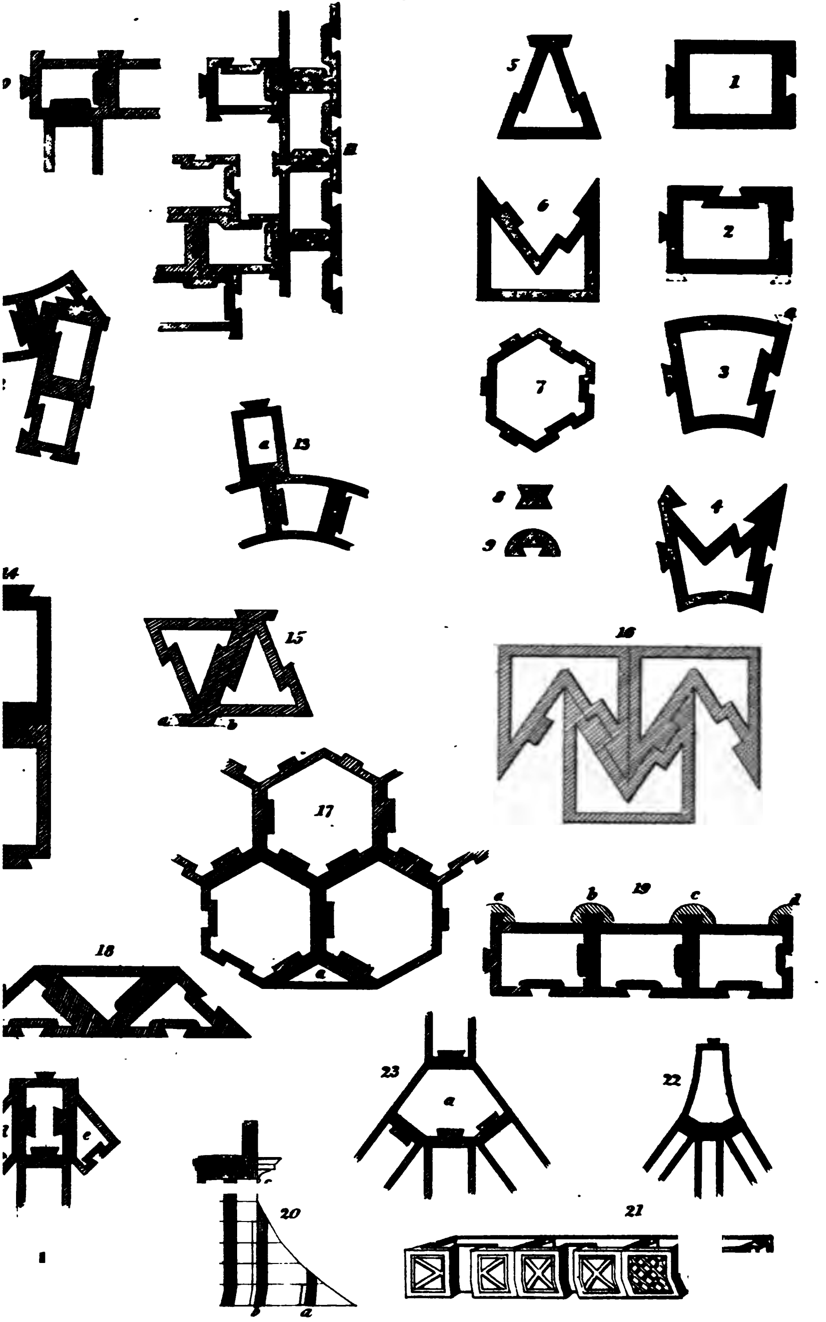
In order to vary the angle of the steel bars, which will be sometimes necessary, according to the thickness of the knife or other edge tool required to be sharpened, the lower plate or table *d,* on which these ends bear, must be raised or lowered. This may be done by turning the screw *e, e,* by which the moveable bottom or plate *d,* is held up, and attached to the box.

As the file edges of the bars will wear away by use, they may be taken out of the box, and turned round, so that different edges may be presented at the angles, or their ends may be reversed.—[*Inrolled July,* 1828.]

Another contrivance of this kind for sharpening knives, has been invented by Messrs. Blake, of Sheffield. It consists of a series of these file edged bars, connected together merely by an axle passed through their centres, and may be set at any angle, and made fast by a screw. The contrivance is very simple, the cost but very trifling, and its use equally effective.

EDITOR.

Deeble's Caissons



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To Edward Barnard Deeble, *of St. James Street, Westminster, in the County of Middlesex, Civil Engineer, for his Invention of a new Construction and Combination or Combinations of Metallic Blocks, for the Purposes of forming Caissons, Jetties, Piers, Quays, Embankments, Light Houses, Foundations, Walls, or such other Erections to which the said Metallic Blocks may be applied.* [Sealed, July 12, 1827.]

The many instances of encroachments which the sea has made upon the shores of this and other countries, has induced the Patentee to invent a mode of constructing embankments which shall possess the several advantages of being capable of erection in less time than stone walls: at a considerably diminished cost: and with equal, if not greater stability, than can be effected in the old method of constructing such works.

The improved mode is by combining a series of caissons, made of cast iron, in ranges, agreeable to the required form of the intended embankment. The caissons are to be fastened together by dovetails, and being hollow, are, when fixed in their intended situations, to be filled with stones and other materials, making them up solid.

PlateVIII, exhibits a variety of forms of caisson suited to every possible situation and circumstance. Fig. 1, shews the simplest form; a plain oblong caisson, as seen on the top, having dovetails at the ends only. This form is applicable to straight lines, either in banking exposed to the sea, or to the interior heavy works of cross forts or braces and buttresses, to be buried in the earth. This form admits of little variation in its application, and none in its strength or gravity beyond what may be gained by increasing the thickness of the sides. Fig. 2, is the most universal form which it appears possible to produce; it may be multiplied to any extent, and yet is perfect in itself, requiring no change of form in the sides to finish a work.

Fig. 3, is the radial form, which may be used in a waved line along the coast, where great strength is required; it also applies to piers and bastions. The dotted projection, letter *a*, is the half dovetail, which would be required to attach it to the cross fort. The radial caisson, should it be considered necessary to add another waved line, would give the effect of arch and counter arch.

Fig. 4, is a radial caisson, having extra dovetails for uniting the main line to the bastion, as seen in fig. 12. Any angle may thus be made with the main line and the bastion, simply by removing this caisson in the direction required.

Fig. 5, may be varied so as to be either an equilateral or isoceles triangle; it is exceedingly strong and simple. An idea of its importance may be obtained by seeing its repetition as in fig. 15.

Fig. 6, is composed of two right angled triangles; the mode of uniting in this form of caisson is by grooves and tongues, which, when combined, create dovetails, as may be seen in fig. 16.

Fig. 7, is the hexagon; this unites in the same way as the preceding form, by groove and tongue, and will not be perfect or secure till three or more are placed together, as in figure 17: it then acquires an amazing degree of strength, and will be applicable to foundations of lighthouses, fortifications, custom-houses, or buildings to be erected on sands, or marsh land, or on the banks of rivers.

Fig. 8, is the portable dovetail, to be used when two caissons with dovetail grooves come together, which may frequently occur in the interior of large works.

Fig. 9, is the semicircular form; this may be applied to the outer dovetails of the universal form, fig 2, as appears in fig. 19.

Fig. 10, is a combination of figs. 1 and 2, it will show the application of the plain oblong caisson in buttresses and cross forts, where a greater weight of metal would be a waste of expenditure.

Fig. 11, is a repetition of the universal form; the general application of which may be seen by this figure, and an idea gained of the strength it imparts and receives from the others with which it may be connected.

Fig. 12, exhibits a portion of a bastion, with the mode of uniting to the main line.

Fig. 13, is the waved line with a cross-fort attached, as at letter *a*; by adding another waved line, and making the spring of one arch on the crown of another, great power may be obtained.

Fig. 14, shows the portable dovetail, applied between two plain oblong caissons.

Fig. 15, consists of two triangular caissons united; the dovetail at the verticle angle is introduced, to show that any other form may be attached to it; but when that dovetail is toward the sea, it should be beveled off to the caissons which it protects, so as to present obtuse angles, marked by the dotted lines *a* and *b*.

Fig. 16, is the repetition of fig. 6, it will apply to any straight works, and, by adding dovetails on the outside, it may be multiplied in the breadth also. This figure will be found particularly useful, where a small work is intended to resist extraordinary pressure, every portion of its interior being equally strong.

Fig. 17. is the hexagonal form united on the outside; the groove and tongue may be omitted in the intermediate angles, as at letter *a*; the form there shown may be introduced, in case of the hexagonal caissons being used in the substructure of buildings exposed to the sea,

Fig. 18, is a form for light purposes, and may be cast very slight on all sides, still retaining considerable strength.

Fig. 19, shows the semicircular form explained in the description of fig. 9; it may be used either to gain additional strength or for ornament.

Fig. 20, is a section of a sloped bank or battery, the angle of which may vary, according to the situation where it is applied: the caisson, from taking so much greater span, may be required to have two dovetails, as at letters *a* and *b*. The whole of the battery caissons will be attached to the perpendicular wall in a direct line, with the exception of the uppermost caisson, marked *c*, which will form a part of the wall, with its sloped surface, extending over the other caissons, and thereby holding them more firmly together.

Fig. 21, exhibits three different modes in which the sides of the caissons may be perforated, or left open, in light work, in order to save the weight and cost of metal.

Fig. 22, is the method proposed for adding strength by means of diagonal bracings; it is laid out on a light scale for the interior of piers or sea walls.

Fig. 23, is for the same purpose, but on a heavier scale; the key caisson, letter *a*, being less elongated, will possess great strength.

Fig. 24, is another mode of keying the cross-forts to the main line. In this, the centre caisson, between the two diagonal stays, will vary from the form of general use, by its having dovetail grooves in both sides, and a dovetail tongue at each corner of the exterior end; the bevil'd end caissons, *d*, and *e*, will fit either side of the centre caisson.

The Patentee says, that he dwells principally on the application of this plan to sea-walls and other works on the coast, because he considers that in such situations it will often be found to succeed when every other mode of building would fail; but it is also suited to a variety of purposes, in which either expedition or strength of workmanship is requisite.

That the use of metallic caissons will be not only practicable, but decidedly superior to the employment of stone, can be easily shown, and their advantage demonstrated, in respect both of economy and security.

The dovetail caisson, *mathematically* considered, is of such strength, in its various forms, that it may almost be pronounced perfect. Its construction (being of metal) is such as to make the weight at all times equal to the importance of the situation where it is required, without altering its principle. Its mode of uniting is universal, whether in an oblique, horizontal, or verticle direction. Its cost, compared with stone, must vary according to locality and the fluctuation of prices; in general, it may be taken at two thirds; and, in point of time in erecting, at least four-fifths may be gained,

The forms of the dovetail caisson, judging from the great varieties produced, will be endless; and its strength in almost all cases, will be equal to that of a key-stone, without the structure being weakened in the same degree by any accident occasioning its injury.

The construction of the caisson, considered as to material and form, will leave a wide field of discretion, so that it may be either of the strength of common stone, or vastly greater; it being a hollow metallic box, opened generally both at the bottom and top, the sides of which may be increased in thickness from half an inch to one inch or more, according to the strength and gravity required; by which means it may always be made subservient to particular circumstances. In common dock-work, or canal banking, the side toward the water may be three fourths of an inch thick; and where there is a heavy pressure of sea, more in proportion. The other sides being less, and the interior in every case filled with liquid lime and rubble stone, or other suitable material to be obtained on the spot, so as to form a solid mass, girt with metal.

The caissons constituting the foundation layer should be closed at the bottom. It is proposed that the caissons be seven feet in length, three feet in height, and from two to five feet in breadth, according to the nature and requisite strength of the work in which they are used.

If a single wall should be required for simple works, the dovetails only unite at each end of the caisson; but should it be required to place three walls together in mass, every caisson will (although there are but five dovetails) give and receive strengths to and from six others, and should an extent of work be required on a plan of fifty, or more in width, the same form of caisson will still be applicable.

In raising one tier or layer of caissons above another, it is scarcely necessary to state, that breaking the horizontal joints is necessary, which may be done by commencing the alternate vertical courses with a half caisson; this will form the whole into a compact body, as each layer will thus become united to those immediately above and below it.—[*Inrolled July*, 1827.]

The Patentee has forwarded to us the following remarks upon his plans:—

"Of the cost of the metallic caisson, nothing can be positively and definitively stated, as the price of metal fluctuates greatly, and the comparative expense of iron and stone is much affected by situation. I shall here merely state, therefore, that the saving, by the adoption of the caissons, can be shown, by data and authorities in my possession, to amount, in some cases, to twenty per cent. in others to thirty, and even to fifty and upwards.

"The advantage of saving time in works on the coast is obviously of the highest importance. At present a sea-wall of the greatest promise may be nearly completed, and the hopes of the projector apparently almost realized; when, frequently owing to the delay usually attendant on stone-work, and the sudden incursion of the element attempted to be excluded, all may be overthrown. The more, therefore, we can accelerate the progress of such undertakings, the greater may be our assurance of success.

"I have advanced an opinion, that about four-fifths of time may be saved by the adoption of the plan now proposed, and believe that the calculation is below the actual advantage to be gained in this respect. An engineer of great experience informs me, that the time necessary for squaring a solid block of granite, such as those now employed at the New London Bridge, is so protracted, that it would be an invincible obstacle in situations exposed to violent and repeated storms; and a great landed proprietor in Scotland, who has already recovered many acres from the sea, has told me, that, although he has large quarries of the best granite on his estate, and near the spot where it is most required, yet, having seen my plan, he shall hesitate in future to use his own stone for such purposes,

"The expedition with which the metallic caissons may be fixed, has been readily allowed by those who have inspected the plans, and seen the models; which I have been permitted to exhibit to many individuals of the highest rank, as well as to several eminent engineers, architects, and surveyors.

"A celebrated engineer, to whom I must acknowledge myself indebted for assistance, states with great confidence, that by means of the metallic caissons, he could bank out the sea, in some particular situations, to the extent of a hundred yards in one tide; and he has expressed his favourable opinion of my design, in terms highly encouraging to me, and which the fear of being considered too sanguine in my own project would have led me to suppress, had they proceeded from any person less qualified to decide on its merits.

He observes, "The science of engineering, in the department of sea-banking, has been much neglected of late, through the unfortunate, and unavoidable failure of several works projected on our coast. During many years of professional experience, I have had such frequent opportunities of observing the devastations of the sea, that I can never cease to regard with deep interest every thing likely to reduce the expense, and accelerate the progress of such protecting barriers as are so imperatively called for.—I have known gentlemen, from principles of pure patriotism, undertake the task of recovering lands from the sea; experienced engineers have been employed, many labourers have been set to work, and the embankment has made great advances; when, from the length of time required, and the inefficient manner in which the work was guarded during its progress, it has been literally annihilated in a single storm, producing great personal anxiety and discomfiture, and leaving the remaining estate encumbered with a large amount of debt, contracted for the purpose of effecting the intended accretion."

He adds, "when I consider the great advantages of the metallic caisson, I cannot but imagine it to be the thing likely to fill up a lamentable vacuum in science. I picture to myself the rising of so many fruitful acres from the very ocean's bed; and the extensive culture of a region, now but the kingdom of the finny tribe, or the sad grave of the luckless mariner. The result may also be a happy domicile to care-worn millions, a gradual decrease of taxes, poor-rates, and other local burdens, offering strong inducements to those who are now compelled to emigrate, to remain at home, and prove themselves the valued and loyal subjects of a prosperous realm."

Many extensive works, for protection against storms, and the invasion of enemies in the time of war, are needed in some of our colonies, where a sufficient quantity of stone could not be obtained, and to transport it from this country would cost more in freight than the complete erection of walls or fortifications constructed of cast iron caissons.

The condescension of a late secretary of state, who expressed his approbation of the design, and mentioned Dover as a situation in which he thought the metallic caissons might be conveniently and advantageously adopted, in the erection of a new pier, which is so greatly needed there, was very encouraging to me, at a time when I was less supported than at present, and will ever be gratefully remembered; nor can I allow myself to close these remarks, without adding my hearty thanks to many persons, who have kindly and attentively considered my plan, whose suggestions I have carefully examined, and by whose observations I have been much benefitted.

E. B. Deeble.

The following Table of the comparative specific gravities of various substances, and their expansibility under certain temperatures, is appended to the foregoing remarks, as applying to the subject.

Specific Gravity of a cubic foot of	*Oz.*
fine Gold weighs	19,640
Standard Gold	18,888
Quicksilver	14,000
Lead	11,325
Fine Silver	11,091
Standard Silver	10,535
Copper	9,000
Gun Metal	8,784
Cast Brass	8,000
Steel	7,850
Iron	7,645
Cast Iron	7,425
Tin	7,320
Granite	2,750
Marble	2,700
Hard Stone	2,460
Loam	2,160
Brick	2,000
Light Earth	1,984
Solid Gunpowder	1,745
Sand	1,520
Pitch	1,520
Dry Box-wood	1,040
Sea Water	1,032
Common Water	1,000
Dry Oak	925
Dry Ash	800
Dry Maple	755
Dry Elm	600
Dry Fir	550
Cork	240

EXPANSION OF METALS, ASCERTAINED BY THE MICROMETER MICROSCOPE.

In a Rod, divided into 100,000 parts, the expansion at boiling heat (212° of Fahrenheit) will, as compared with its dimensions at the freezing point 32°, amount to,

Platina	86 parts.
Cast Iron	111
Gold	155
Copper	170
Cast Brass	190
Silver	208
Tin (grain)	248
Lead	286
Zinc	300
Ditto hammered	310

From the above table it appears, that a cast iron caisson of seven feet in length, would, if heated to 100° of Fahrenheit, expand rather more than one-thirtieth of an inch.

To William Hall, *of Colchester, in the County of Essex, Merchant, for his invention of certain improvements in machinery, or apparatus for propelling vessels.*—[Sealed Dec. 22, 1827.]

The object of the Patentee is to dispense with the ordinary paddles employed for propelling vessels, and indeed of all machinery or apparatus applied on the outside of the vessel for the purpose of rowing or driving the vessel, forward by the mechanical force exerted by paddles or oars against the water; to substitute in place of such contrivances a jet or volume of water, driven out with force in a horizontal direction at the stern, the reaction of which against the water shall produce the impelling effect required, and drive the vessel in the opposite direction.

In the lowest part of the vessel below the water line, a cylinder is placed vertically, which is open at the lower end to admit water into it through an aperture in the bottom of the vessel, but having a grating to exclude weeds, or any other floating substances. The top of this cylinder is closed with a cap, and rendered perfectly air-tight. Within the cylinder, there is a large screw placed vertically, the edges of the worm of which nearly touch the periphery of the cylinder. The screw is intended to revolve upon its axis, or upon pivots at top and bottom, and acting in the way of an Archimedes pump, to raise and force the water through the horizontal tube above-mentioned, which leads from the upper part of the cylinder.

The screw pump is made to revolve with great rapidity by a rigger affixed to the upper end of its axle, which is driven by a band, leading from a steam engine. A jet or volume of water is by these means projected with great force from the stern of the vessel, and by striking against the surrounding mass of fluid, in which the vessel floats, causes the vessel to be propelled forward, that is in the opposite direction to the jet.

It is proposed, under some circumstances, to employ reciprocating pumps to be driven by the steam engine within, which shall raise a volume of water from the bottom, and force it out at the stern.

The attempt to propel vessels by the force of a jet of water driven from the stern is not new; various modes of effecting this have been devised. Mr. Stedman Adams, of America, in 1811, obtained a patent for such a contrivance; and in 1820, Messrs. Lilley and Fraser obtained a patent for the same object (see the Second Volume of our First Series, page 101.) If there is any novelty in the present plan, it is the introduction of the screw pump in a vertical position, for raising or forcing the water; although paddles of this form have been applied horizontally on the outsides of vessels. There is, however, no question, but that the power expended in this way to raise the water, will have a considerable less beneficial effect than if applied directly to the working of paddles.—[*Inrolled June* 1828.]

To JAMES GILBERTSON, *of Hertford, in the County of Herts, Grocer, for his having invented an improvement, or improvements in the construction of Furnaces, by which they Consume their own Smoke.*—[Sealed Jan. 15, 1828.]

THE Patentee says, that his invention "consists in the construction of furnaces, with their sides made of hollow plates of iron, in order that a current of air may pass through them, and in its course become heated, and then be discharged into a cavity or ash-pit, formed at the back of the fire, whence, proceeding through a grating affixed at top of this cavity, it comes in contact with the smoke and flame of the fire, and causes an almost complete combustion of the whole of the fuel employed.

"In large furnaces, where a great quantity of air is necessary I make a portion, or the whole of the bars hollow; but I do not claim any invention in this application of hollow bars, only as in aid of the effect to be produced by the hollow plates at the side."

It is further stated, that the Patentee does not intend to confine himself to any particular form of furnace, as it is evident, various modifications may be requisite in adapting it under different circumstances. It appears, therefore, that the invention, to whatever form of furnace it may be applied, consists merely in making two hollow spaces on the sides for the passage of the air to the back part of the fire, or through hollow bars to the same part of the furnace, for the purposes of directing a small current of air in such a way at the back part of the furnace, as to cause the flame and other heated vapours, to be driven back into the ignited fuel, in order that it may become consumed.

There being no particular novel feature, or form of furnace claimed, we are at a loss to discover in what this invention consists, as the contrivance of consuming the smoke of a furnace, by conducting a current of air into the flue, beyond the fire, which shall drive back the flame and smoke into the ignited fuel, has been repeatedly applied for the same purpose, and with good effect, Under certain modifications, it forms the subjects of several Patents, (See our First Series,) Bunton's Patent, Vol. I. page 407; Johnson's, Vol. II. page 440; and, if we mistake not, was first applied by Mr. Sheffield, in 1812.—[*Inrolled March* 1828.]

To **John Meaden**, *of Millbrook, near Southampton, in ths County of Hants, Coach Maker, for his Invention of Certain Improvements on Wheels for Carriages.* [Sealed December 4, 1827.]

The Patentee considers that there would be an advantage in the running of carriage wheels, if their peripheries; that is, their fellies and tires, were made half round on the edge, instead of flat or beveled, as is the common practice, The improvements herein proposed, therefore, consist in forming the tire, or iron hoop, which embraces the periphery of the wheel, with a convex surface on the outside; it may be semicylindrical, or curved in a smaller degree, as shall be thought most desirable.

The proposed mode of making the tire, is by passing bars of iron in a heated state between rollers; the one roller having a hollow groove cut round it, and the other, a corresponding bead or rib. The bar being by these means rendered hollow on one side, and rounded on the other, is ready to be bent into a hoop or ring, for covering the periphery of the wheel. A suitable length of bar iron thus prepared, is now to be bent into the form of a hoop, and welded together; after which, it is placed upon a conical block, and hammered to its true circular form.

The wooden part of the wheel being made, and the periphery or fellies finished to the true circular form, the tire or iron ring, is uniformly heated all round, which causes it to expand sufficiently to be passed over the wooden rim or fellies, and when this is properly effected, the wheel is lowered into a vessel or pool of water, for the purpose of cooling the iron, and causing it to shrink, which binds it fast to the wheel.

All this, however, is the ordinary process employed in placing an iron tire upon a wooden wheel, and the only feature of novelty claimed, is the rounded form of the tire, which it is thought, by the Patentee, will be found greatly preferable to the flat bar iron, with which carriage-wheels have been heretofore shod.—[*Inrolled June* 1828.]

Polytechnich and Scientific Intelligence.

Transposition of the Viscera.

In the *Annales de la Med. Phys.* (May 1828) there is an account of a curious transposition of some of the viscera of the chest and abdomen. The subject of this phenomenon was a soldier, who had always enjoyed good health, but was killed in a duel. On inspecting the body, the liver was found in the left hypochondrium, and the spleen in the right. The liver was unusually pale; the gall-bladder very much distended with bile; the spleen was smaller and denser than usual. The cardiac opening of the stomach was turned to the right side, the pyloric to the left. In the chest, the heart was found occupying the right side of the thoracic cavity; and the peculiarities usually seen in the left lung here existed in the right. The man seemed to have been aware of something peculiar about him, for he often joked with his comrades, saying he was sure his heart was on the right side, whatever the faculty might say.

Test of Potash by Nickel, before the Blow-pipe.

Berzelius commends it; he says, it is only necessary to dissolve the oxide of nickel in borax by heat, and to add the vitreous matter before the plow-pipe, a little nitre, felspar, or other body containing potash, to obtain instantly a blue glass. The presence of soda does not prevent this action. The nitrate and oxalate of nickel may be employed, but the absence of cobalt must be ensured.

Inspiration of Inflammable Gas.

THIS experiment was made by Signor *Giacomo Cardone*, in consequence of the difference of opinion on the effects of this gas on the lungs, entertained by *Scheele*, *Fontana*, and others. The air being expelled from the lungs as much as possible, the mouth-piece of a bladder, containing thirty cubic inches of the gas, was applied to the mouth, and the gas inhaled at two inspirations. An oppressive difficulty of respiration, and a distressing constriction at the pit of the stomach, were the first sensations. These were followed by abundant perspiration, a general tremor over the whole body, seeming to commence at the knees; an extraordinary sense of heat, slight nausea, and violent headache. "My eyes," says Sig. G. "beheld things but indistinctly, and a deep murmuring sound was in my ears. After a short time all these effects ceased, except that of heat, which increased in a most alarming manner; but ultimately, by the abundant use of cold drinks, I was restored to my original health." *Giornale di Fisica.*

Mutual Action of Nitre and Sal Ammonia. Preparation of Nitrogen.

FROM repeated experiments, M. Soubeiran finds that these salts, when mixed, do not give nitrous oxide on the application of heat, as might have been expected, supposing that muriate of potash and nitrate of ammonia had been formed, and as has, in fact been stated; but that the results are chloride of potassium, water, chlorine, muriatic acid, a little nitrous acid, and azote. The latter gas may even be prepared in this way, for the decomposition is easily effected, and a small quantity of the mixed salts yields much gas. The gas must be collected over water, and washed with a little potash, to separate all the chlorine and nitrous acid. The best proportions are, one part of muriate of ammonia, and two parts of nitrate of potash.

Antidote to poisonous Mushrooms.

ALL fungi should be used with great caution, for even the champignon, and edible garden mushroom, possess deleterious qualities when grown in certain places. All edible species should be thoroughly masticated before taken into the stomach, as this greatly lessens the injurious effects produced by the poisons. When accidents of this kind happen, vomiting should be immediately excited, and then the vegetable acids should be given, either vinegar, lemon-juice, or that of apples; after which give antispasmodic remedies, to stop the excessive bilious vomiting. Infusions of gall nuts, oak bark, and Peruvian bark, are recommended, as capable of neutralizing the poison. Spirit of wine and vinegar extract some part of their poison, and tanning matter decomposes the greatest part of it.

Novel Inventions.

Mode of extracting Tannin from Bark. Patented by JOSEPH GILES, *of Guildford, Vermont.* April 11, 1827.

Specification.—This lixivium, or tannin principle, is obtained by soaking and digesting the proper materials, such as fine ground oak, or hemlock bark, &c. in an apparatus designed particularly for the purpose; that is to say, I take twelve leaches or vats, of any convenient capacity, each filled with ground bark, and so placed as to draw by a cock, with suitable convenience, from each of the twelve leaches into one common receiver; I then place one cistern above the leaches, so as to draw from said cistern into all the twelve leaches. Into this said upper cistern I have a common engine for generating steam, operating so as to heat the liquor therein to a boiling heat; which liquor, thus heated, I draw upon and fill the first of the said twelve leaches. I take care, in filling the leaches with ground bark, that it be loose and be not crowded; but so that the liquor will freely fill the whole leach, and become saturated with the tanning principle of the bark; after thus lying upon the bark, and soaking it a convenient time, I draw it from the leach into the receiver; I then pump it from the receiver, back in the cistern, and heat it again with the steam engine, as before; then I draw the liquor upon the second leach, and while it is soaking there, I heat water, or weak liquor, drawn from the leach, after the first process, and draw the same from the cistern upon the first leach; I then draw the strong liquor from the second leach, into the receiver, and from thence, pump it again, into the cistern; I again heat it as before, and then draw it upon the third leach, and so continue the liquor—repeating the process through the whole twelve leaches, following on with the second, and third, and sometimes fourth addition, to the first leach—taking care that none of the weak liquor or subsequent runnings become mixed with the first running and strong lixivium. As often as the tanning principle becomes entirely exhausted from the leach in any of the leaches, throw away the leach, and fill with fresh. By continuing this process, I reduce the entire tanning principle and strength of three, and even four cords of the best bark, into one hogshead of tanning lixivium. I then add two pounds of saltpetre, and one pound of common salt, to each hogshead of my lixivium, and bung it up, air-tight, for use.

One hogshead of this lixivium will, in three days time, sufficiently tan five dozen of calf-skins, and heavy skins and hides, in the same proportion. In addition to the great saving of time, and labour of workmen, produced by the use of this powerful lixivium, the leather will be more completely tanned, will weigh heavier, will be more solid and close, and be less subject to be soaked with water, and grow spongy, than leather tanned in the ordinary manner.

This lixivium, may also be usefully applied to cables, to all sorts of ropes, sails, canvass, and the tackle of ships, made from hemp, or flax; charged and impregnated with this principle, they will support a greater weight, obtain

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Specification or Description of an improved Gun Lock, for which a Patent has been obtained by NATHANIEL SALTONSTALL, JUR. *of New London, Conn. prefaced by a few remarks on the defects of those now in use.* Issued May, 1828.

VERY many of the dangers to which we are exposed from the accidental discharge of fire-arms, arises from the present imperfect construction of the lock, the trigger of which is at all times immediately connected with the dog, and may in many cases be made to trip when only half-cocked, and has been attended with the most fatal consequences to sportsmen, horses, horsemen, soldiers, and private individuals, by the accidental catching of the trigger, the sudden jar of a holster, the pressure of a heavy finger, or the trifling of the inexperienced, when little care was supposed necessary; and with most of our locks the dog must be drawn from the tumbler so suddenly, to prevent their catching at half-cock, as to destroy the aim.

The following description of my improvement, I think, will supply these defects, and combine entire safety with durability and simplicity. When the lock is only half-cocked, the tumbler is secured by a strong steel dog, hung nearly perpendicular from the top of the plate, its screw supported on top by a bridle or cap; on the right hand side of this dog, and falling nearly perpendicular, with its centre, is a tooth or wedge, with its point downwards; on a line with the bottom of this tooth or wedge is a lever, which has on the end next the tumbler a tooth or wedge, similar to the one on dog, and an arm projecting on its outside at right angles with the plate; this lever may be of a suitable length, accommodating itself to the size of the lock, and is secured by a screw on its opposite end; between this lever and dog, and operating near the heels of each, lays a double acting spring, forcing the dog into the tumbler, and the lever from the dog; the lever is prevented from falling below the plate by a projection or stop. If the lever is now raised by the trigger, the tooth or wedge passes on the right hand side of the one on dog, and by the combined action of the teeth or wedges and spring, which is now put in its greatest tension, the lock is more firmly secured together; if the lever is kept raised by the trigger the tumbler is secured, and the cock cannot be moved backward or forward by any external application; the moment the finger releases the trigger, the lever returns to its place, and admits of cocking the lock. The upper part of the tumbler is more full than the lower, and the upper notch not so deep as the lower one, consequently, when cocked, the tooth or wedge on dog passes on the right hand side of the corresponding one on lever; if the lever is now raised, its tooth or wedge passes on the left hand side of the corresponding one on dog, and draws it from the tumbler without the possibility of its catching at kalf-cock, unless eased to its place by the hand. As this description refers to a right hand lock, an inversion of its parts would form one for a left hand barrel. This improvement is not understood to be confined to the situation I have given it in my drawing, but may be applied in various situations round the tumbler, and at convenient distances, and in forms and sizes suiting the fancy; and its effects produced with equal certainty by dropping the lever, if thought more desirable, which may be accomplished by a different disposition of its parts. With this improvement, which is easily applied to old locks by a slight alteration of their tumblers, and removing their dogs and feather springs, or dog springs, and is alike applicable to all gun locks operating by flint and steel or percussion, effectually securing them from springing when only half cocked, and insuring a perfect stroke with the cock when firing, is designed without bruising the dog or tumbler notches.

I claim every mode of operation for engaging and disengaging the trigger from the dog, securing the dog with, and disengaging it from the tumbler, on the principle of inverse application of lever or levers, inclined plane or inclined planes, cone or cones, half circle, or half circles, tooth, or teeth of any curvature, applied by an arm or lever, as in my drawing, or on the principles of a bolt, or slide, which produces the same results, and may be varied to suit the fancy.

New Mathematical Instrument.

THE Middletown Gazette contains the subjoined account of an ingenious and important invention by J. N. Palmer, of the Franklin Society of Cadets, in the A. L. S. and M. Academy. The instrument, the properties and powers of which are described below, are said to have been examined by competent mathematicians, who consider it as a highly valuable acquisition to mathematical science. By the aid of this instrument the following problems may be performed.

1st. Right and Oblique Angled Trigonometry, in all its various cases.

2d. Mensuration of Planes and Solids generally, to wit, the areas of triangles; the contents of fields in any shape whatever, either trigonometrically, or by the Pennsylvania methods, the instrument answering every purpose of a traverse table. The solid contents of cubes, cylinders, and timber, boards, loads of weod, and is at the same time the instrument by which the measure is taken as well as the calculator. The above, that in mensuration of superfices, is altogether on a new plan. At one move of the instrument, the sides, angles, and contents; in short, every property which belongs to the triangle, are exhibited in one view.

3d. The art of Navigation, according to the most celebrated methods, to wit, Plain and Traverse Sailing,

4th. Levelling, either after the manner of a spirit level or trigonometrically, it answering every purpose of a small rafter level.

5th. The height of an object, is ascertained simply by taking its altitude from either one or two stations; if from one station no calculations are required, the altitude being pointed out; from two stations, the altitude may be obtained by a momentary calculation.

6th. A Protractor, by which a survey or other right line drawing may be performed without making one more line or point than is required to remain on the paper, when the draught is finished.

7th. The power of ascertaining the specific gravity of bodies, and is very correct and delicate in its operations.

8th. It answers every purpose of the common and reflective Goniometer, finding the angles with ease and dispatch.

9th. Interest of any sum of money, from 50 to 22,000 dollars, for one year, at 6 per cent. the calculation is performed in less than one minute.

10th. An almanack, the days of the week, months and years, are readily found, during the 19th century: by a small alteration, they may be found until the termination of 2,000 years.

11th. The new moons, with the fulls and quarters, for any place on the globe, provided its longitude from Washington is known.

12th. The moon's southing.

13th. The moon's age.

14th. Time of high water at any place on the globe.

15th. It answers every purpose of a Pedometer, by continually pointing out the distance a person has passed over, while walking, whether going up hill or down, and how much, showing either the horizontal or perpendicular distance.

16th. The course and velocity of the wind, together with the momenta of power exerted on a given space.

16th. The velocity and momenta of running water, either under the ice, or at any depth below the surface.

The instrument actually performs the above mentioned calculations. On the next succeeding one, there is to be arranged, in addition, the calculations performed on our best scale: the cube or square root of any sum, multiplication and division, decimal fractions, rule of three, liquid measure, cask guaging, weighing metals, chord of sixty, scale of equal parts, and Dr. Wollaston's celebrated scale of equivalents.

The above calculations are performed wholly from data derived from the instrument.

The instrument is either two or four inches in breadth, one-fourth inch in thickness, and either one, two, or three feet in length, with one joint, three small wheels, one circle, and a semicircle.

If this is really so, we should feel obliged by any of our Transatlantic friends favouring us with a sight of this instrument. EDITOR.

Mode of preserving wooden Buildings from the effects of Fire, invented by Dr. Fuchs, Professor of Mineralogy in Munich.

THE following is the process: ten parts of potash or soda; fifteen parts of quartz (sand), and one part charcoal, are melted together. This mass, dissolved in water, and either alone or mixed with earthy matters, applied to wood, completely preserves it from the action of fire.

An improved Mode of fixing the Mariner's Compass on Ship-board. By LEMUEL LANGLEY, *of Norfolk, Virginia.*

THE object of my said improvement is to dispense altogether with the binnacle, in which the compass is ordinarily fixed, to cause it to answer all the pnrposes of a ' tell-tale,' and to secure it against accident from cannon-shot, the shipping of heavy seas, or other causes of injury. The mode in which these ends are attained, is by cutting a hole through the deck of the vessel, at or near the place where the binnacle is usually situated; this hole is cut through into the cabin, and within it is placed the compass with its box, suspended in the usual way, and when so situated it is completely out of the reach of cannon or other shot. In order to cause it to act as a *tell tale*, the compass box is made with a glass bottom, so that the card can be seen as perfectly in the cabin as upon deck; I also make the compass card translucent, or semi-transparent, in consequence of which it may always be lighted from below, and will be much more plainly seen at night, than when lighted in the ordinary way. The compass is defended at top by a very thick piece of glass; such as I have used has been three-fourths of an inch in thickness, and this is also defended by a rim, or or band projecting above the deck; the lower side of the box was also glazed; and I contemplate sometimes making the sides of the box of glass, should it be desirable to admit light in that way.

What I claim as new in the above described invention, is the fixing of the compass entirely within the planking of the deck of a vessel, and the mode of rendering it equally visible, both upon deck, and in the cabin.

List of Patents

GRANTED IN SCOTLAND SINCE SEPTEMBER 9, 1828.

For a new mode of communicating heat. To Joshua Taylor Beale, county of Middlesex.

For a new and improved method of applying iron in the sheathing of ships and other vessels, and of applying iron bolts, spikes, nails, pinials, braces, and other fastenings used in the construction of ships and other vessels. To Granville Sharp Pattisonn, county of Middlesex.

For the improved application of air to produce heat in fires, forges, and furnaces, where bellows or other blowing apparatus are required. To James Beaumont Neilson, county of Lanark.

For a new method of propelling vessels, which method is also applicable to other purposes. To Andrew Motz Skene, Esq. county of Middlesex.

For an improved cartridge, for sporting purposes. To Edward Forbes Orson, county of Middlesex.

For certain improvements in machinery for hackling, dressing, or combing flax, hemp, tow, and other fibrous materials. To Peter Taylor, county of Lancaster.

For a method of, and an apparatus for, generating steam and various gasses to produce motive power, and for other useful purposes. To Samuel Hall, county of Nottingham.

For certain improvements in the method of manufacturing and cutting paper by means of machinery. To John Dickinson, county of Hertford.

New Patents Sealed in 1828.

To William Godfrey Kneller, of Great Pearl Street, Spittal Fields, in the county of Middlesex, Chemist, for his invention of certain improvements in evaporating sugar, which improvoments are also applicable to other purposes.—27th November, 6 months.

To Joseph D'Arcy, of Leicester Square, in the county of Middlesex, Esq. sole executrix and residuary legatee of Charles Broadrip, late of Spring Gardens, in the parish of St. Martin's-in-the-fields, in the county of Middlesex, Esq. deceased, for certain improvements in the construction of steam engines, and the apparatus connected therewith.—29th November, 18 months.

To Edward Dakin Philip, of Regent Street, St. James's, in the county of Middlesex, Chemist, for his having invented an improved distilling and rectifying apparatus.—29th November, 6 months.

To Robert Stein, of Regent Street, Oxford Street, in the county of Middlesex, Gent., for his having invented certain improvements in distillation.—4th December, 6 months.

To William Brunton, of Leadenhall Street, in the city of London, Civil Engineer, for his invention of a machine, apparatus, or instrument, to ascertain and register the quantity of specific gravity, and temperature of certain fluids in transit; part or parts of which invention is or are applicable to other purposes.—4th December, 6 months.

To Philip Derbishire, of Ely Place, Holborn, in the county of Middlesex, Esq. for his invention of a certain medicine or embrocation, to prevent or alleviate sea sickness, which may be usefully applied to other maladies.—4th December, 6 months.

To Zachariah Riley, of Union Street, Southwark, in the county of Surrey, Engineer, for his having invented or discovered certain improved apparatus, to be attached to carriages, for the purpose of affording safety in travelling.—10th December, 4 months.

To George Rennoldson, of South Shields, in the county of Durham, Miller, for his having invented certain improvements in rotatory steam engines.—4th December, 6 months.

To John Hague, of Cable Street, Wellclose Square, in the county of Middlesex, Engineer, for his having invented certain improvements in the method of expelling the molasses or syrup from sugar.—6th December, 2 months.

To Isaac Dickson, of Chester Street, Grosvenor Place, in the county of Middlesex, Esq. in consequence of a Communication made to him by a certain Foreigner residing abroad, and discovered by himself, for an invention of an improved projectile.—8th December, 2 months.

To John Boase, of Albany Street, Gentleman, and Thomas Smith, Mechanic, of Augustus Street, both in Regent's Park, in the county of Middlesex, for their having invented certain improvements in machines or machinery for scraping, sweeping, cleaning, and watering streets, roads, and other ways, which machines or machinery may be applied to other purposes.—10th December, 2 months.

To Thomas Lawes, of the Strand, in the county of Middlesex, Lace Manufacturer, for his invention, of an improvement in the manufacture of bobbin net lace.—10th December, 6 months.

To Charles Cummerow, of Lawrence Pountney Lane, Cannon Street, in the city of London, Merchant, in consequence of a Communication made to him by a certain Foreigner residing abroad, for certain improvements in propelling vessels.—10th December, 6 months.

To Abram Louis, of Dean Street, in Birmingham, in the county of Warwick, Mechanic, for his having invented a mechanical volti suvito, to assist the players of music quickly to turn the leaves of music books whilst playing.—10th December, 2 months.

To Samuel Jones, of the Strand, in the city of Westminster, and county of Middlesex, Artist, in consequence of a communication from a foreigner residing abroad, for a new and improved method of producing instantaneous light.—10th December, 2 months.

To Thomas William Channing Moore, of the city of New York, in the United States of North America, now residing at Hampstead, in the county of Middlesex, Merchant, in consequence of his having received a communication from a Foreigner residing abroad, of an invention of an improved method or combination of machinery for manufacturing hats or caps.—10th December, 6 nths.

To Valentine Llanos, of Hampstead, in the county of Middlesex, Gentleman, in consequence of a communication made to him by a certain person residing abroad, of an invention of an improvement or improvements on bits. —15th December, 6 months.

To John Forbes, of Cheltenham, in the county of Gloucester, Architect or Surveyor, for his new invented method of burning or consuming smoke.—15th December, 6 months.

To Richard Williams, of Tabernacle Walk, in the County of Middlesex, Civil Engineer, for his having invented certain improvements in the application of elastic and dense fluids to the propelling of machinery of various descriptions.—15th December, 6 months.

To Anton Bernhard, of Finsbury Circus, in the county of Middlesex, Engineer, for his having invented certain improvements on, or additions to, wheels or apparatus for propelling vessels, and other purposes.—15th December, 6 months.

To John Dicken Whitehead, of Oakview Mills, Saddleworth, in the county of York, Woollen Manufacturer, for his having invented certain improvements in making, constructing, or manufacturing cartridges, for sporting and other purposes.—15th December, 6 months.

To John Morfitt, of Cookridge, near Leeds, in the county of York, Bleacher, for his having invented a certain improvement in retorts used by bleachers and makers of oxymuriatic acid, or oxymuriate of lime.—15th December, 2 months.

To John Slater, of Birmingham, in the county of Warwick, Manufacturer of Coach Springs and Axletrees, fo his having invented certain improvements in axletree and the boxes for carriage wheels.—15th December months.

To John Levers, of the town of Nottingham, Machinist, for his having invented or found out certain improvements in machinery for making lace, commonly called bobbin-net.—18th December, 6 months.

To William Stead, of Gildersome, in the county of York, Millwright and Machine Maker, and James Stead, of Doncaster, in the same county, Wood Valuer, for their having invented a paddle wheel upon a new and improved principle, for propelling steam packets, and other vessels.—18th December, 2 months.

To Joseph Charlesworth and Joshua Charlesworth, of Holinfirth, Woollen Manufacturers and Merchants, and Samuel Andrew Mellor, of the same place, Cloth Dresser, all in the county of York, for their having invented certain improvements on or additions to gig mills, for the raising and finishing of woollen cloths and other fabrics.—18th December, 2 months.

To James Simister, of Bull Street, Birmingham, in the county of Warwick, for his new invented improvements in weaving, preparing, or manufacturing a cloth or fabric, and the application thereof, to the making of stays and other articles of dress.—18th December, 6 months.

To Edward Josephs, of Haydon Square, Middlesex, Merchant, for his having invented certain improvements on the wheels, axletrees, and other parts of carts, waggons, and other conveyances.—18th December, 6 months.

To Francis Horatio Nelson Drake, of Colyton House, in the county of Devon, Esq. in consequence of a Communication made to him by a Foreigner residing abroad, being in possession of the process for the invention of a peculiar Till.—18th December, 4 months.

Meteorological Journal kept at the London Institution.

DATE	HOUR.	BAROM.	Thermometer.		REMARKS.
			IN.	OUT.	
Nov.					
1	9		47	42·5	Foggy.
	3		49	46·2	Cloudy.
2	9		50	45·4	Foggy.
	3		54	52·2	Cloudy.
4	9		49	42·5	Very Fine.
	3		55	53.2	Very Fine.
5	9		49	42·3	Fine.
	3		52	48·3	Fine.
6	9		46	40·0	Fine.
	3				
7	9		47	41·2	Fine.
	3		53	49·5	Cloudy.
8	9		48	43·5	Very Fine.
	3		50	45·7	Cloudy.
9	9		50	45·5	Cloudy.
	3		43	36·1	Cloudy.
11	9		41	36·5	Cloudy.
	3		42	39 2	Hazy.
12	9		43	40·1	Cloudy.
	3		40	30·2	Foggy.
13	9		32	25·5	Very Foggy.
	3		33	28·5	Thick Fog.
14	9		33	31·0	Very Foggy.
	3		44	50·0	Very Fine.
15	9	29·47	45	41·5	Cloudy.
	3	29·45	46	48·5	Rain.
16	9	29·40	49	49·2	Heavy Rain.
	3	29·45	51	50·5	Fine.
18	9	29·62	51	48·2	Cloudy.
	3	29·63	52	49·2	Fine.
19	9	29·98	49	44·0	Very Fine.
	3	29·85	49	49·9	Fine.
20	9	29·90	48	46·5	Cloudy.
	3	30·10	50	50·3	Fine.
21	9	30·20	49	48·2	Cloudy.
	3	30·15	51	51·5	Cloudy.
22	9	30·05	52	53·0	Cloudy.
	3	30·06	57	56·1	Fine.
23	9	29·85	53	51·5	Cloudy.
	3	29·84	54	53·4	Slight Rain.
25	9	29 80	51	49·5	Cloudy.
	8				
26	9	29·82	52	50·6	Cloudy.
	3	29·92	51	48·8	Very Fine.
27	9	29·95	53	53·0	Fine.
	3	29·90	54	53·2	Cloudy.
28	9	29·91	54	54·9	Fine.
	3	30·00	52	46·5	Fine.
29	9	30·10	53	51·3	Fine.
	3	30·05	55	55·6	Cloudy.

Meteorological Journal kept at the London Institution.

DATE.	HOUR.	BAROM.	Thermometer.		REMARKS.
			IN.	OUT.	
Nov. 30	9	30·04	58	57·8	Fine.
	3	30·10	56	55·0	Cloudy.
Dec. 1	9	30·10	57	56·7	Very Fine.
	3	29·85	51	46·4	Cloudy.
2	9	30·05	49	44·	Fine.
	3	30·40	42	38·0	Fine.
3	9	30·41	42	38·5	Fine.
	3	30·20	45	43·0	Fine.
4	9	30·18	46	49·2	Cloudy.
	3	30·35	53	51·2	Cloudy.
5	9	30·38	53	52·0	Fine.
	3	30·35	48	40·5	Foggy.
6	9	30·30	48	44·2	Cloudy.
	3	30·20	50	49·0	Fine.
8	9	30·10	50	48·5	Cloudy.
	3	29·95	53	49·5	Rain.
9	9	29·90	53	51·5	Fine.
	3	29·50	55	44·9	Rain.
10	9	29·36	54	55·0	Fine.
	3	29·80	50	48·0	Fine.
11	9	29·85	51	49.0	Fine.
	3	30.04	53	52·1	Cloudy.
12	9	30·05	54	47·0	Fine.
	3	30.38	52	51·2	Cloudy.
13	9	30·17	51	53·0	Fine.
	3	30·14	49	53·7	Fine.
14	9	30·20	48	50·0	Cloudy.
	3	30·10	51	51·2	Fine.
16	9	30·20	50	40·5	Foggy.
	3	29·95	54	44·2	Fine.
17	9	29·80	53	49·0	Cloudy.
	3	29·90	52	48·5	Rain.
18	9	29·50	55	49·5	Very Fine.
	3	29·36	54	51·5	Rain.
19	9	29·80	50	54·2	Fine.
	3	29·85	51	55·0	Fine.
20	9	30·04	53	48·0	Cloudy.
	3	30·05	54	59·0	Cloudy.
21	9	30·15	54	52·5	Cloudy.
	3	30·12	55	55·0	Fine.
23	9	30·07	55	50·8	Cloudy.
	3	29·95	54	55·	Cloudy.
24	9	29·72	53	48·0	
	3	29·60	54	51·2	
25	9	29·50	51	45·5	
	3	29·60	54	48·0	
26	9	29·68	49	37·0	
	3				

METEOROLOGICAL JOURNAL, FOR NOVEMBER AND DECEMBER, 1828.

1828.	Thermo.		Barometer.		Rain in inches.	1828.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low	High.	Low.			Hig.	Low	Hig.	Low.	
Nov.						Dec.					
26	58	35	29,86	29,76		11	50	41	30,22	29,86	
27	50	42	30,00	29,86	,15	12	54	30	30,26	Stat.	
28	55	41	30,00	Stat.		13	53	38	30,31	30,26	
29	60	48	30,00	29,99		14	51	45	30,33	30,39	
30	55	45	30,05	29,96		15	50	35	30,22	30,11	
Dec.						16	52	37	30,03	29,94	
1	45	35	30,16	29,72		17	50	45	29,72	Stat.	,575
2	39	28	30,34	Stat.		18	52	47	29,52	29,44	
3	55	35	30,11	30,00		19	52	39	29,86	29,61	
4	55	39	30,16	30,10	,025	20	53	43	29,96	29,86	
5	52	43	30,11	29,91		21	55	49	29,99	Stat.	
6	52	32	29,91	29,72		22	53	48	30,03	29,96	
7	52	44	29,66	29,55	,075	23	52	45	29,88	29,72	
8	45	39	29,41	29,22	,35	24	53	44	29,61	29,44	,005
9	43	32	29,88	29,56	,75	25	46	36	29,50	29,33	,475
10	50	33	30,01	29,99							

LOWER EDMONTON. **CHARLES H. ADAMS.**

Lat. 51° 37' 32" N. Long. 3' 51" W. of Greenwich.

CELESTIAL PHENOMENA, for January, 1828.

D.	H.	M.	S.	
1	0	0	0	Clock before the ☉ 3' 57"
1	8	0	0	☿ in conj. with λ in Sagitt.
1	11	0	0	☾ in conj. with 4 ξ in Libra.
1	12	0	0	☾ in conj. with γ in Libra.
1	20	0	0	☾ in conj. with θ in Libra.
2	12	0	0	☾ in conj. with φ in Oph.
5	0	0	0	Clock before the ☉ 5' 48"
5	3	52	0	Ecliptic conj. or ● new moon
6	6	0	0	☽ in conj. with β in Capri.
8	5	0	0	☽ in conj. with θ in Aquarius.
10	0	0	0	Clock before the ☉ 7' 57"
10	8	0	0	♀ in conj. with ρ in Oph.
11	11	0	0	☽ in conj. with ζ in Pisces.
11	19	18	0	☽ in ▭ first quarter.
12	2	0	0	☽ in conj. with ο in Pisces.
15	0	0	0	Clock before the ☉ 9' 50"
15	1	0	0	☽ in conj. with 1 δ in Taurus
15	2	0	0	☽ in conj. with 2 δ in Taurus
19	12	17	0	Ecliptic opposition, or ○ Full Moon.
19	17	44	0	☉ enters Aquarius.
20	0	0	0	Clock before the ☉ 11' 26"
20	11	0	0	☾ in conj. with 2 α in Cancer.
21	4	0	0	☾ in conj. with ξ in Leo.
21	9	0	0	☾ in conj. with ο in Leo.
21	19	0	0	☾ in conj. with π in Leo.
25	0	0	0	Clock before the ☉ 12' 43"
27	6	0	0	☾ in conj. with κ in Virgo.
27	18	0	0	♀ in conj. with 1 ν in Sagitt.
27	17	21	0	☾ in □ last quarter.
28	17	0	0	☿ in conj. with γ in Capri.
28	21	0	0	☾ in conj. with γ in Libra.
29	5	0	0	☾ in conj. with θ in Libra.
29	16	0	0	♀ in conj. with ο in Sagitt.
29	18	0	0	☿ in conj. with δ in Capri.
29	22	0	0	☾ in conj. with φ in Oph.
30	0	0	0	Clock before the ☉ 13' 41"
30	15	0	0	♀ in conj. with π in Sagitt.

☽ The Waxing Moon.—☾ The Waning Moon.

Rotherhithe. J. LEWTHWAITE.

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. XI.

[SECOND SERIES.]

Original Communications.

ART. XV.—ON THE LAWS RELATIVE TO PATENTS FOR INVENTIONS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—It is far from my wish to occupy the pages of your valuable Journal with unnecessary discussion, but the last letter of Mr. De Jongh, inserted in your January number, invites, and renders some explanation from me necessary; which your kindness will allow. The gratification of having elicited the judicious observations of so many of your able correspondents, by my first appeal to the public upon the subject of the anomalies and oppressions of the present mode of granting patents for inventions, is by no means diminished by the diversity of opinions which must necessarily exist as to the most efficacious remedy for such abuses.

The collision of opinions will generally promote the truth, and lead to the best result. Whilst I canvass the subject with the earnestness which its great importance claims, I beg that neither Mr. De Jongh, nor any other of your intelligent assistants in the cause of scientific reformations, will infer that I can treat their general views otherwise than with due respect and attention; at the same time that I may strongly point out the practical inconveniences of certain parts of their proposed amendments.

Mr. De Jongh infers that His Majesty's Royal Letters Patent are to be considered as granted in the nature of a "*reward*" to the Patentee for the discovery of his invention, and that he proposes a "*bargain*" with the king for the monopoly during the fourteen years granted.

Now, I humbly conceive that patents under the Great Seals, or otherwise, granted for inventions, are the last remaining and worst features of that scandalous system of well organized Chancery devices, which oppressed the nation under the name of grants of monopolies for above a century, during the reigns of the Tudors and Stuarts. The crown was continually driven by its extravagance to *enforce* the most violent and iniquitous *pretensions* of "PREROGATIVE." The cruel rapacity of courtiers, state officers, and priest-lawyers supported--the "RIGHT DIVINE." These individuals craftily combined the intricate *mechanism* of the engine of extortion, and remorselessly revelled in the spoils poured into the capacious "*Hanaper*" of Chancery, and into the wide-gaping, bottomless coffers of the royal treasury, and its dependent offices. Spoils heartlessly wrung from the profits of the merchants, and the hard-earned savings of the trader and labourer throughout the realm, by means of licences, letters patent, and privileges for the trafficking in, purchase, and selling of every article of necessity or comfort, which could by practised skill be brought into the gripe of this powerful state engine of ruthless plunder.

In the days of our "*good Queen Bess,*" and under the perfected auspices of her Chancery lawyers and ministers, this intolerable system of oppression attained a gigantic stature. The monarch who sent for the Speaker of the House of Commons, and told him that *her* will, in the form of a message, was not a matter for their *discussion*, but for their *humble obedience*, had no idea of *limited prerogative*; it was a contradiction in terms to her lofty spirit; and SHE was gifted by nature with a mind and energies fully capable of the support of her highest pretensions. Happily for the country, another feature of Elizabeth's character unintentionally presented an effectual antidote to the extravagant pretensions of prerogative—her encouragement of *learning* was as innate and decided, as her support of the *jus regis*.

The art of printing lent its new and powerful aid to the spread of *principles*; readers and *reasoners* multiplied, and *public opinion* then first attained a growth and consistency, resulting from the progress of literary and scientific acquirements. At the period of this incipient state of *mental* freedom, James the First ascended the throne, with royal notions of prerogative, equally as high as those of his gifted predecessor; but *public opinion* was gradually advancing to the outworks, and sapping the foundations of the citadel. *The House of Commons found its tongue*; representations, both loud and firm, were made against the monopolies and exclusive licences, which oppressed the community, *only* for the advantage of its rapacious government. The temperament of the monarch was not sufficiently firm to support the pretensions of prerogative; and after a continued struggle with "*public opinion*" for years, the monarch yielded the fortress. In the 21st year of his reign, 1624 (only one before his death), the statute for the suppression of monopolies passed.

But such is the retentive nature of power, that whilst the act delivered the country from the scourge of all monopolies, commissions, grants, licences, charters, and *letters patent*, for the sole buying, selling, making, working, or using of any thing within this realm, declaring all such to be a great grievance and inconvenience to the subject, *contrary to the laws of the realm*; I say, such is the retentive nature of power, that some of the monopolies were retained by subsequent clauses; and under sec. 6, it is provided, that "any declaration before mentioned shall "not extend to any letters and grants of privilege for the "term of fourteen years or under, hereafter to be made "for the sole working or making of any new manufactures within this realm to the true and first inventor," &c.

This reservation of the prerogative was unfortunately not attended with the suppression of the enormous and numerous fees of office, which operate to this day as any thing but a "*reward*" to the inventor for laying open his discovery. As to the "*bargain*" with the king, I submit that the transaction wants the essential quality of a bargain, viz. freedom, reciprocity, and interchange of value. The Patentee is *obliged* to take his patent upon the *terms fixed by the party* who takes his money for the protection pretended to be offered. That protection is inefficient and unreal. The servants of the state, who are benefited by the payment of the fees, and have the power of making that protection efficient and real, do not concern themselves about such an act of justice, but leave the Patentee in a state of shipwreck, among the rocks and perils of Chancery and law-suits.

Has the king, in this supposed "*reward*" and "*bar-*

gain," given the quid pro quo? Is PROTECTION and SECURITY the result of the payment by the Patentee of the heavy and numerous fees demanded by virtue of the "*prerogative*"? Every man who has the least experience, or knowledge of the consequences of petitioning for this "*reward,*" and "*bargaining*" for this monopoly, will answer NO. *Protection* was at least formerly granted to the party who purchased letters patent and licences. It required a strong enactment, backed with the terrors of a premunire, to repress *the energy beyond the law,* with which the executive supported the purchasers of its extensive sales of monopolies.—(Vide 21 Jac. c. 3. s. 4.)

The granting of patents for inventions is now merely a mode of aiding the incomes of the Attornies and Solicitors-general, of the Secretary of State, of the Lord Chancellor, of the Lord Privy Seal, and other offices, *at the expense of the science, industry, and talent of the community,* without any bargain or endeavour, on their part, for the security and protection of the Patentee.

The question is not what may be the extent of the antiquated pretensions of the griping "*Chancery Hanaper,*" and similar appendages of the royal prerogative, for the expensive "*protection,*" alias the suppression of the mental resources and energies of the community, *but what are its just demands upon the government* for real support, and efficient protection to its inventive talent.

This leads us to a consideration of the legal and defined powers which should be entrusted to any set of men, under an improved system, suited to the views and wants of society. Now, I request Mr. De Jongh's attention to the distinction between a mere *commission* from the king, which cannot, without legislative sanction, take cognizance of, and adjudicate claims and matters of property (excepting property affected by foreign treaties), and the establishment of a *new court*, which cannot be done *at all* by the king, without the assent of his Parliament: for the king, by the common law of England, cannot make a new court of record by virtue of his prerogative.—(Vide Coke upon Magna Charta.) Consequently, I am correct in treating the establishment of either a commission, or of a court, *with powers to judge of matters of right and property*, as a legislative proceeding.

I have not said that the granting or not granting a patent is a part of legislation, although had I asserted it I should have been perfectly correct, for it is only by the provision before mentioned in the statute of monopolies (21 Jac. c. 3. s. 6), that the power was first *legally* given to the crown to issue "letters patent and grants of privilege *for the term of fourteen years*" only (with other restraints) *for new inventions.*

The statute declares, in the preamble and first section, that "*all* grants, licences, letters patent, monopolies, &c. "are *altogether* contrary to the ancient and fundamental "laws of this realm, and so are and shall be utterly void "and of no effect." As therefore the crown had not the *legal* power to issue patents for inventions until it was given by Parliament, *a fortiori*, may not the crown now issue a commission, with enlarged or new powers, to take cognizance of matters of title, claim, and property, in and to inventions; *such powers* must be given by legislative enactment.

Whatever may be the formal wording of a petition, or its virtual meaning, neither the Lord Chancellor, the Secretary of State, the Attorney-general, nor any other officer, can legally refuse to issue the necessary documents and warrants from their respective offices, upon the ground that the invention sworn to is not worthy of a patent, or that the application is made upon frivolous pretences of valuable discoveries, which are not such. The only legal ground upon which a patent may be denied is, that the discovery *is not* new; or that opposing claims are set up in respect of it.

Having thus shewn that any new court and its powers *must* be established and limited by Parliament, I can only refer to my letter, inserted last December, as containing my continued, and I think, sound reasons for not delegating to any tribunal the power of refusing a patent, or licence of invention, upon the mere grounds of such being frivolous and unworthy of a protection.

Your Correspondent, signing R. in your January number, offers some additional reasons in support of my view. The effect of such a power upon the feelings, by its assumption of the acknowledged rights of individuals, can only be truly appreciated by a recurrence to that strongest of logic—the *argumentum ad hominem.* I, therefore, again most respectfully, and merely to prove the propriety of my observations, ask Mr. De Jongh, "*Would he like to form an instance of rejected application* for a protection to his invention or discovery, upon the *sole* ground that his new court deemed it not worthy of a patent, and that his application was made upon the frivolous pretence of a valuable discovery?" If *he* would not like a rejection of his application, and a depression of his inventive talent upon such a ground, I apprehend no man else would relish a similar decision, however high might be the reputation of the judges for science, skill, and integrity.

The necessity for the establishment of a separate court for the ready adjudication of *disputed claims* to inventions is obvious, but I do not at present see that the onus should be thrown *upon the court* of searching its registers, before a patent be allowed, to ascertain if the discovery be new. I think public notice of applications should be given, which, if not opposed within a limited time, the protection or patents should issue; subjected, however, to an application to the court from any party aggrieved, by an insertion in the specification of any matter which may affect the prior rights and title of the complaining party. The specification might then be altered, under directions from the court, if it were satisfied that such insertion was unwitting, and made without intention of injury; otherwise the court should have power to order the cancelling of the protection or patent.

The strength of Mr. De Jongh's objection to my proposal, to give, under an *entire new system* of charges, regulations, and safeguards, an UNLIMITED PROTECTION (as to its efficacy) *to every bonâ fide new discovery,* appears to lie in these observations—1st. That "innumerable applications would be made for absurd and frivolous pretensions of valuable discoveries, in case the expenses were greatly reduced," (page 174.) 2d. That "a confusion of patent rights, quarrellings and litigations, would be the result." (page 175.) 3d. That "every thing would be patented. Not a sign-board in the kingdom but would bear His Majesty's arms." (page 175.) The observation, "that the systems of patents would become more perplexed than ever," I refer to the second head.

Upon the first point I have surmised, (page 118, in the Journal for December) that such a system as I propose, formed upon the basis of getting rid of the expenses, oppressions, and absurdities, *which are interwoven with, and integral to the* PRINCIPLE of issuing Chancery patents for inventions, might be rendered largely available to the financial resources of the state; at the same time, that it should, by its institutions and *arrangement,* elicit, invite, encourage, and amply protect *every* exertion of inventive genius.

The various suggestions of your Correspondents shew the possibility of *an entire new system* being devised, of practical and extensive benefit to the country, which may, in time, supersede the plan of granting Chancery Patents for discoveries, with their attendant petitions, references, warrants, seals, signets, sign manuals, boxes, baskets, hanapers, gratuities, heavy duties, costly litigations, contrary decisions, undefined principles, and inefficacious securities.

Commissioners, men of known skill, science, and upright character: in short, men of intellect and practical experience, should be appointed; under powers vested in them *by Act of Parliament,* to grant and issue at a certain *moderate duty* to be paid to the Government, *protections,* whether annual or triennial, to be continued at the option of the party applying for any term, not exceeding thirty years. Of course, such a board or court must have the power of refusing PROTECTIONS, upon the ground *only* of opposition to the applicant's claim to priority of invention, or of their cognizance upon evidence in open court of want of novelty in the supposed discovery; and in cases of evident fraud, subterfuge, or other improper conduct on the part of the applicant, in setting forth the specification, or in any proceedings thereto relating. Necessary powers of calling before them, and examining upon oath, all parties, their witnesses, &c. both *viva voce,* and by written interrogatories, and of calling for papers, documents, &c. should be given, so that speedy and effectual justice may be rendered *to all.* The board or court should have the general powers of a court of equity, but at a *fixed* and *moderate* charge to the suitors, as the maximum of its awarded costs.

But upon the great principle of my system, the universal encouragement of *bonâ fide* inventions, brought under the cognizance of the court with *clean hands*; the court *ought not* to have the power of refusing *any* application for a *protection*, upon the ground that the invention is frivolous, or not useful, or otherwise unworthy of a protection.

I agree with Mr. De Jongh, that innumerable applications, under such a system would be made, and possibly, very many of them might be for inventions that would *eventually* turn out to be absurd, frivolous, useless, and not worthy of *protections*; but still, no set of men ought to be trusted with the anomalous power, and uncertain dealing with the inherent rights of men, which a prejudication involves. By *the innumerable applications and grants of protections, the revenue would be, at all events, proportionately benefited*; the bounds of science would be extended; improvements in every branch of the arts and manufactures promoted, *even amidst numerous failures and useless inventions*; and, (as the Manchester Memorial to the present Lord Chancellor which, I now peruse, for the first time, forcibly urges) " the inferior improvements, which to regular operatives are constantly suggesting themselves, would, if adopted and acted upon, form collectively an important addition to our means of producing," (page 179, in the Journal for January.)

In regard of useless inventions and frivolous discoveries, I will only further observe, that the parties prosecuting such, will soon discover their futility, and will have the satisfaction of their own experience on the subject, without an arbitrary prejudication of their claims. Under a " protection" from the court, each invention may be safely offered in its respective market, and if it should not bear a price, a renewed protection of course will not be applied for; the invention will be relinquished. The satisfaction remains, *that it has been securely tried under a* *protection, issued at a moderate charge.* How infinitely different this is to the course and consequences of Chancery Patents, taken out at an expense of £.150 to £.600, without the costs of the suit, that ultimately lets the astonished and ruined *Patentee* into the secret, that his invention is founded upon frivolous, or at least untenable pretensions of valuable discoveries!!

Mr. De Jongh's next position, that " a confusion of patent rights, quarrellings, and litigations," would be the result of my plan, and that " the system of patents would become more perplexed than ever," is easily disposed of. The proposed court being instituted by the authority of Parliament, with ample powers, *equitably* to protect *all bonâ fide* inventions and improvements, and furnished with clear and well defined *principles* of law to guide *with certainty* its judicial decisions, will not be at a loss, I apprehend, to promote a just judgment in the most intricate case.

The principles of law, which shall in future govern the courts, generally in matters of discoveries, and the consequent rights of parties protected by patents, or other modes of security being finally settled by authority of Parliament, and a separate court for the adjudication of such matters established, I conceive the chief causes of quarrellings and litigations will cease. " *Uncertainty* is the parent of strife," as Lord Coke excellently observes. Principles being reduced to *certainty*, and ability and *power* being provided to adapt and enforce them, their practical application becomes easy. A good arrangement of the business details of such system are only wanting to complete the facility of its operation. The internal regulations of a new court could be without great difficulty so judiciously framed, as almost to exclude the possibility of litigation to any extent, even amidst innumerable *applications* for and issues of its protections.

Upon Mr. De Jongh's third objection, that "every thing would be patented; not a sign-board in the kingdom but would bear His Majesty's arms," I have only to observe, that if the results of an universal system of encouragement of, and protection to the inventive talent of the country, by effectually securing *every bonâ fide* discovery and improvement to its projector, *without an arbitrary* PREJUDICATION *of its merits and utility*, should be—increase of the revenue; a general extension of the arts and manufactures of the kingdom; excitement and reward of the intellectual exertions of the operatives, in every branch; and satisfaction to all classes, in the security afforded, I think every man of philosophic mind and benevolent heart, will hail the exhibition of His most gracious Majesty's arms upon every sign-board, and *in every shop* throughout the empire.

I can only add, in the words of your able Correspondent, (a difference with whom, upon any leading principle of the cause which we are mutually supporters, I deem a misfortune,) "*certainly, it ought to be so.*"

I am, Gentlemen,

Your obedient servant,

VINDICATOR.

ART. XVI.—ON THE LAWS RELATIVE TO PATENTS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—In hopes of your continued indulgence by favouring me with a place in your valuable Journal for the communication of my ideas on patent rights, I take the liberty again to address you on this subject. I attentively perused the communication, signed R. apparently a fellow townsman of mine, but at present unknown to me. I am sorry to say, R. says nothing worth saying, from beginning to end. I am at a loss to find out what good it can do to send you a copy of the memorial sent by the Manchester Chamber of Commerce in 1825, to the then Attorney-general.

With all imaginable deference for the sound judgment touching commercial matters, possessed by the Gentlemen composing that Chamber of Commerce, yet do I think them as ignorant respecting patent rights as judges and juries generally are; in proof of this bold assertion, I need only call your attention to their fourth recommendation to the legislature, namely, that " patent rights be restricted to particular and specific applications, and not to be extended to general principles."

A fine flowery sentence, that without any meaning in it, a patent right is to be restricted to " specific applications;" hence, the inventor of the stomach pump should not be entitled to a patent, because it rests on general principles, (if by general principles is meant laws of nature,) but if the inventor rests his claim for its specific application to the stomach, he shall be entitled to a patent.

But supposing I afterwards discover that that pump is applicable to another specific purpose, then, I suppose, according to this doctrine, I may also claim a patent; and pray, can the Gentlemen of the Manchester Chamber of Commerce say, that there is any machine existing which does not rest on general principles? Wherein consists mechanism at all, but general principles? It were a pity to enlarge any further on this absurdity. R. disapproves of having a court constituted, such as I and others think advisable, without showing a preferable way of removing the existing evils; he objects to submit to the controul of men, and forgets, that according to the present miserable system, he is obliged to submit patent cases to men, but such as are not competent to judge; and I again say, that in my humble opinion, patent rights require the nicest and most delicate discrimination. It is in some cases as difficult to point out the distinction of mechanical applications of two different machines, as to point out a distinction in the causes of two different plants; what better can be done in such a state of things, than to submit to the judgment of such a set of men, as shall be thought by government or the nation most competent to legislate on these matters?

I should be glad to see better suggestions than mine appear in your valuable publication, and it would give me still more pleasure, if I found that the matter remained not confined to mere opinions and communications, but that actual measures were adopted to answer this desirable end, namely, the improvement of our Patent Laws.

I remain, very respectfully,
Gentlemen,
Your most obedient servant,
M. DE JONGH.

Manchester, January 8, 1829.

ART. XVII.—ON THE GRADUATOR, AS APPLIED IN THE PROCESS OF SPINNING AND ROVING COTTON, WORSTED, FLAX, &c. &c.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—My observations on the Graduater, as applied in the process of Spinning, &c. &c. &c. communicated to you, and published in the Journal of Arts for January, had reference to the frustrum of a cone acting upon a cylinder of uniform dimensions, and I then stated my intention of showing the applications of the same principles to the double frustrum, or two sections of a cone, one operating as the active agent or mover, and the other receiving motion therefrom, communicated by the usual medium of a strap or band.

The double frustrum has this important advantage—the strap or band is kept of uniform tension throughout the entire operation, without the intervention of any straining weight or lever, as is generally applied in the machines where the single frustrum and cylinder is used, and owing to the circumstance, requisite gradations of speed may be adjusted with equal, or perhaps greater facility.

The machinery, in which the Graduaters have been generally adopted, are the bobbin and fly frames, constructed under various modifications of arrangement and apparatus, and which are used in that part of the process of spinning termed roving; and it is in this stage that the soft sliver of fibrous material is so extended and reduced in substance as to require a gentle twist to give the needful strength; the operation is consequently delicate, and important to the complete success of the subsequent part of the process, for it is on the soft, even, and uniform character of the roving that good spinning mainly depends.

The recent inventions in this department have not been numerous, or very important; the *helical* box, invented by Mr. John Green,* however ingenious, is not a Graduater, but the medium, through which a conical Graduater acts upon the speed of the bobbins; the arrangements in this machinery display mechanical tact and capacity, which deserve encouragement.

The still more recent improvements of Mr. Holdsworth,† are entitled to attention, and are said to be valuable; but not having seen his patent machinery in operation, I am unable to state in what the peculiarities of his invention consist.

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* For Mr. Green's Specification, see Vol. VIII. of our Journal, First Series, page 283.

† For Mr. Holdsworth's Specification, see Vol. XIV. page 233.

To the politeness of Messrs. Hallerlley and Stannerley, extensive manufacturers at Leeds, in Yorkshire, I was indebted for an opportunity of inspecting the self spinning mule of Mr. De Jongh*, who has availed himself of the conical Graduater, in the construction of his machinery. I had the gratification of seeing this interesting machine at work, performing some of the most dexterous manipulations of the human hands, with precision and exactness, and producing woollen yarn (as I was informed) of superior quality. When experience and opportunity shall have enabled the very ingenious inventor to simplify their construction, and reduce the cost of these excellent machines, they will, probably, be very generally adopted by the trade.

The double frustrum may be applied with advantage in other mechanical arrangements, where an increase or decrease of speed is desirable under given relations; and the following investigations and theorems will, it is presumed, facilitate such application in the formation of new mechanical combinations, in which such considerations form part of the object, to which an ingenious machinist may have to direct his attention.

I am, Gentlemen,
Your most obedient servant,
J. Rayner.

King Square, Goswell Road, London.
January 17, 1829.

These theorems apply to the frustrum of a cone, cut into two sections of equal length, one being the mover of the other: motion being communicated by a strap or band;

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* For Mr. De Jongh's Specifications, see Vol. XIII. page 307. First Series, and Vol. I. page 13, Second Series.

and, it is presumed, that the machinery is so arranged, that the *first speed* of the bobbin cylinder is accurately provided for, at commencing the operation.

First. The circumference of the delivering roller.

Second. The quantity of twist, or number of revolutions the spindle shall make to one of the delivering rollers.

Third. The thickness of the roving or yarn to be spun.

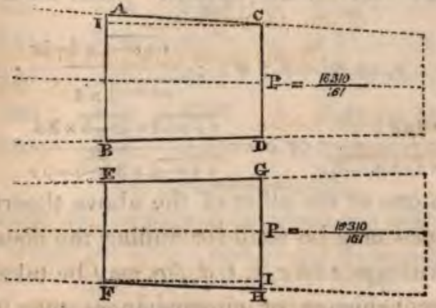
Fourth. The circumference of the bobbin cylinder, on which the said roving or yarn is to be wrapped or coiled.

Fifth. The two first diameters of the double frustum must be taken as known, also their length or height.

Sixth. A certain number of layers of roving or yarn to be coiled on the cylinder or barrel of the bobbin, must be taken as known, so that the smaller or larger diameters may be taken as a limit.

Seventh. The sum of the diameters of the frustum must be taken as a uniform quantity. These particulars being arranged, I proceed to state the general principles, and to supply examples in illustration.

Let A, B, C, D, represent the frustum of a cone, and E, F, G, H, represent another frustum of the same cone, I, C, and I, F, the height of each frustum.



Then we have A B + E F = C D + G H, and put d = A B, the large diameter, e = C D, less diameter of the larger frustum, m = I C, the height of the frustums, P the altitude of the cone. Then let $\frac{d}{2} = \frac{AB - CD}{2} = \frac{d - e}{2}$

Then as $\frac{1}{2} d : P :: \frac{d}{2} : m = 10$, the height of the frustum; and as $\frac{d - e}{2} : m :: \frac{1}{2} d : \frac{m\,d}{d - e} = P = \frac{16310}{161}$, altitude of the cone.

Then $a =$ the circumference of the delivering roller $= 3.927$

$t =$ the twist, or number of turns, the spindle and flyer make to one of the delivering rollers

$r =$ twice the thickness of the roving

$b =$ the circumference of the bobbin cylinder $= 3.1416$

$2d =$ the sum of the diameters

$c =$ the value of each separate coil, or number of layers of yarn or roving

$s =$ the first speed of the bobbin, when adjusted to *take up* the yarn or roving, as delivered by the roller

Then we shall have $d + e = 2\,d$, and shall have $s = t - \frac{r\,a}{\overline{r + c - 1} \times b}$ universal for the speeds. Then as $d : e :: t - \frac{5\,r}{\overline{r + c - 1} \times 4} : s$, or $2d - e : e :: \frac{\overline{\overline{r + c - 1} \times 4 - 5r}}{\overline{r + c - 1} \times 4} : s$. Then

$$e = \frac{\overline{r + c - 1} \times 8\,d\,s}{\overline{r + c - 1} \times \overline{4\,t + 4\,s - 5\,r}} \text{ or } e = \frac{\overline{r + c - 1} \times \overline{4t - 5} \times 2\,d}{\overline{r + c - 1} \times \overline{8\,t - 5} - 5\,r}$$

Either the one or the other of the above theorems will be general, and may be used for finding the diameters of the double frustum, and r, c, t, d, &c. may be taken of any value that convenience or circumstances may suggest. To apply the following general theorem, viz.

$$e = \frac{\overline{r + c - 1} \times \overline{4t - 5} \times 2\,d}{\overline{r + c - 1} \times \overline{8\,t - 5} - 5r} = \text{the diameters of the lesser frustum.}$$

'ake $t=5.r=\frac{1}{12}$ $2\,d=14$ $c=$ the required number of the oil 1, 2, 3, 4, &c. &c. Then per theorem take $c=1$, we ave $\frac{\overline{r+c-1}\times\overline{4t-5}\times 2\,d}{\overline{r+c-1}\times\overline{8t-5}-5\,r}=e=\frac{12\times 15\times 14}{12\times 35-60}\div 5=\frac{504}{72}=7$. Then er theorem, taking $c=24$ $\frac{\overline{12+24-1}\times 15\times 14}{\overline{12+24-1}\times 35-60}=\frac{7350}{1165}\div 5=$ $\frac{470}{33}=6{\cdot}309=e$. Then $2\,d=14-6{\cdot}309=7{\cdot}691=d$.

'he larger and smaller diameter of the frustums for ·309 + 7·691 = 14 = $d+e=2\,d$. Then taking the ommon difference for the divisor = 7, and for the divi-end 42, we shall have the following divisors, dividends, nd diameters of the frustums, arranged in a tabular form, iz.

Number of coil.	Divisor.	Dividend.	Lesser Frustum.		Large Frustum.
1	72	504	7	+	7 = 14 = 2*d*
2	79	546	6.91	+	7.09 = 14 = 2*d*
3	86	588	6.83	+	7,17 = 14 = 2*d*
4	93	630	6.77	+	7,23 = 14 = 2*d*
5	100	672	6.72	+	7.28 = 14 = 2*d*
6	107	714	6.67	+	7.33 = 14 = 2*d*
7	114	756	6.63	+	7.37 = 14 = 2*d*
8	121	798	6.59	+	7.41 =14 = 2*d*
9	128	840	6.56	+	7.44 = 14 = 2*d*
10	135	882	6.53	+	7.47 = 14 = 2*d*

&c. &c. ad infinitum.

contraction of the preceding theorems will occur thus, nd from which the above results are determined.

$$e=\frac{\overline{r+c-1}\times 8\,ds}{\overline{r+c-1}\times\overline{4t+4s}-5r}=\frac{42\,c+462}{7\,c+65}$$

To determine the height or space to be moved over by ie strap or band on the double frustum, for each coil or covering of roving or yarn.—Taking the data as before, and $m = 10$, $d = 7$, and $e = 6{\cdot}309 = \frac{1470}{233}$. Then by similar triangles, as $\frac{d-e}{2} : m :: \frac{d}{2} : \frac{md}{d-e}$ or as $\frac{161}{466} : \frac{10}{1} :: \frac{7}{2} = \frac{32620}{322} = \frac{16310}{161} = \frac{md}{d-e} = \frac{16310}{161}$, altitude of the cone. Then as $\frac{d}{2} : \frac{md}{d-e} :: \frac{\overline{5c-5} \times d}{\overline{16r+16e-16} \times t + 10 - 10c - 20r}$

$$= \frac{\overline{5c-5} \times \frac{16310}{161}}{\overline{8r+8c-8} \times t \times 5 - 5c - 10r} = \text{the height of each move,}$$

$$= \frac{81550c - 81550}{5635c + 52325} \div 35 = \frac{2330c - 2330}{161c + 325},$$ which determines the common difference for the divisor to be 161, and for the dividend 2330, which may be tablulated as below—

Number of coil.	Divisor.	Dividend	Height of each move from the first diameter.
1	1656	00000	000
2	1817	2330	1.28
3	1978	4660	2.35
4	2139	6990	3.27
5	2300	9320	4.05
6	2461	11650	4.73
7	2622	13980	5.33
8	2783	16310	5.86
9	2944	18640	6.33
10	3105	20970	6.75

&c. ad infinitum, to any extent to which the frustums may extend.

The theorem, $t - \frac{ra}{\overline{r+c-1} \times b} = s$, is universal for any dimensions of bobbin, roller, and twist, that may be determined upon, and the successive speeds for each coil will

nd when c is taken 1, 2, 3, 4, 5, &c. &c.; and in the example, taking the data as before, we shall have the successive speeds for each coil, $s = t - \frac{r\,a}{\overline{r+c-1} \times b} =$

$$5 - \frac{60}{48} = \frac{15}{4} = \frac{5c+40}{c+11} = \overset{\text{1st}}{3{\cdot}75} = \overset{\text{2d}}{3{\cdot}84} = \overset{\text{3d}}{3{\cdot}92} = \overset{\text{4th}}{4{\cdot}} = \overset{\text{5th}}{4{\cdot}571}$$

$d + e = 14$, and $\frac{d}{e} = \frac{4c+32}{3c+33} = \frac{3{\cdot}84}{3{\cdot}75} = \frac{7{\cdot}00}{6{\cdot}91}$, and $\frac{d}{e} = \frac{4c+32}{3\ c+33} = \frac{3{\cdot}92}{3{\cdot}75} = \frac{7{\cdot}00}{6{\cdot}83}$, &c. &c. The common differences being determined as in the other cases; the results may be put into a tabular form, and continued at pleasure.

OBSERVATIONS.

1. To apply these theorems, part of the data must be previously determined; circumstances, and the object which the intelligent machinist may have in view, will fix the value of *a*, *b*, *r*, *t*, and *d*. These known, the other will be found as theorem.

2. From the preceding investigations we deduce the following relations, viz.—The greater diameter divided by the less, and multiplied by the first speed, will give the speed required, by any given move or coil; and the first speed divided by the greater, by the less diameter, will give the increase of speed; and the speed required at any given move or coil, divided by the fresh speed, will be equal to the greater by the less diameter.

3. Speed is to be understood in this article to import the quantity of motion required by the bobbin cylinder, at any given coil, to exactly *take up* the yarn or roving without strain.

4. In the preceding theorems *r* is uniformly taken as unity, divided by twice the thickness of the roving or yarn; viz. $\frac{1}{24} \times 2 = \frac{1}{12} \Big) \frac{1}{1} \Big(\frac{12}{1} = 12.$

5. The figures 5 and 4, in the general theorems, represent a, b; viz. the delivering roller, and the bobbin cylinder respectively, their diameters standing in that relation; and when this data is changed, reference must be had to that fact, and the exact value of a, and b, must be taken, or their relatives or figures.

SCIENTIFIC ADJUDICATION.

Court of King's Bench, Westminster, Jan. 15, 1829.
(Before the Lord Chief Justice.)

LEWIS *v.* DAVIS.

THIS was an action for infringement of Patent Right, brought by the plaintiffs, Messrs. J. and W. Lewis, of Brinscomb, against the defendant, Mr. C. F. Davis, of Nailsworth; both parties being clothiers of the first respectability in the County of Gloucester. The plaintiffs obtained a patent in the year 1818, for certain improvements on a machine for shearing or cropping woollen cloths, the specification of which, after describing one of their machines contained a rotatory cutting operation across the cloth, states their claims to novelty to consists of—first, a spring bed; second, a triangular wire, coiled round a cylinder; third, a spiral brush, and fourth, the *described method* of shearing cloth across, from list to list, by a rotatory cutter.

The defendant is also possessed of a patent right for an improved shearing machine, operating across the cloth, by a rotatory cutter, combined with certain novelties of construction; the rotatory cutter having also a lateral movement, by which the operation of shearing is performed in a superior manner; and the defendant contended, that

b
a

The piece of cloth to be shorn is first wound upon the beam *k*, and its end is then conducted through the machine, between the flat springs *f*, and *g*, as shewn in Fig. 3, to the other beam *l*, and is then made fast; the sides or lists of the cloth being held and stretched by small hooks, called habiting hooks.

The cloth being thus placed in the machine, and drawn tight, it is held distended, by means of ratchets on the ends of the beams *k*, and *l*, and palls, or by any other well known contrivance for this purpose.

In commencing the operation of shearing, the carriage *d*, must be brought back, as in Fig. 2, so that the cutters shall be close to the list; the frame of the cutters being raised up on its pivots as it recedes, in order to keep the cloth from injury, but is lowered again, previously to being put in action.

Motion is then given to the mechanism by a band or winch applied to the rigger or pulley *m*, which, by means of an endless cord, passed round the pulley *n*, at the reverse end of the axle of *m*, and round the other pullies *o*, and *p*, and the small pulley *q*, on the axle of the cylindrical cutter, gives the cylindrical cutter a very rapid rotatory motion; at the same time, a worm or endless screw on the axle of *m*, and *n*, taking into the teeth of the large wheel *r*, causes that wheel to revolve, and a small drum *s*, upon its axle, to coil up the cord, by which the carriage *d*, with the cutters *a*, and *e*, and the spring bed *f*, and *g*, is slowly, but progressively made to advance, and to carry the cutters over the face of the cloth, from list to list; the rapid rotation of the cutting cylinder *a*, producing the operation of cropping or shearing the pile.

Upon the cutting cylinder between the spiral blades, it is proposed to place stripes of plush, to answer the purpose of brushes, to raise the nap or pile as the cylinder goes round, and thereby assist in bringing the points of the wool up to the cutters.

The other parts of the specification describe the same contrivance adapted to a machine for shearing lengthwise of the cloth.

The defendant's machine is represented at Fig. 6, 7, 8, and 9, and embraces, among a variety of old contrivances, the improvements claimed under Gardner and Herbert's Patent, (see Vol. XI, First Series, page 85), on whose behalf this action is defended.

Fig. 6, is a geometrical elevation of one side of the machine. Fig. 7, a plan or horizontal representation of the same, as seen on the top ; and Fig. 8, a section taking vertically across the machine near the middle, for the purpose of displaying the working parts more perfectly than is seen in the two preceding figures. These three figures represent a complete machine in working condition, the cutters being worked by a rotatory motion, and the cloth so placed in the carriage as to be cut from list to list; *a, a, a,* is a frame or standard of wood or iron, firmly bolted together by cross braces at the ends, and in the middle. In the upper side rails of the standard, there are a series of axles carrying antifriction wheels *b, b, b,* upon which the side rails *c, c,* of the carriage or frame that bears the cloth runs, when the cloth is passing under the cutters in the operation of shearing. The side rails *c, c,* are straight bars of iron, formed with V edges on their under sides, which run smoothly in the grooves of the rollers *b, b, b.* These side rails are firmly held together by the end stretchers *d, d.*

The sliding frame has attached to it the two lower rollers *e, e,* upon which the cloth intended to be shorn is wound; the two upper lateral rollers *f, f,* over which the cloth is conducted and held up, and the two end rollers *g*, *g*, by which the habiting rails *h*, *h*, are drawn tight.

In preparing to shear a piece of cloth, the whole length of the piece is in the first place tightly rolled upon one of the lower rollers *e*, which must be something longer than the breadth of the cloth, from list to list. The end of the piece is then raised, and passed over the top of the lateral rollers *f*, *f*, from whence it is carried down to the other roller *e*, and its end or forrul is made fast to that roller. The hooks of the habiting rails *h*, *h*, are then put into the lists, and the two lower rollers *e*, *e*, and the two end rollers *g*, *g*, are then turned, for the purpose of drawing up the cloth, and straining it tight, which tension is preserved by ratchet wheels attached to the ends of the respective rollers, with palls dropping into their teeth.

The frame carrying the cloth is now slidden along upon the top standard rails by hand, so that the list shall be brought nearly up to the cutter *i*, *i*, ready to commence the shearing operation; the bed is then raised, which brings the cloth up against the edges of the shears.

The construction of the bed will be seen by reference to the cross section, Fig. 8. It consists of an iron or other metal roller *k*, *k*, turned to a true cylindrical figure, and covered with cloth or leather, to afford a small degree of elasticity. This roller is mounted on pivots in a frame *l*, *l*, and is supported by a smaller roller *m*, similarly mounted, which roller *m*, is intended merely to prevent any bending or depression of the central part of the upper roller or bed *k*, *k*, so that the cloth may be kept in close contact with the whole length of the cutting blades.

In order to allow the bed *k*, to rise and fall, for the purpose of bringing the cloth up to the cutters to be shorn, or lowering it away from them after the operation, the frame *l*, *l*, is made to slide up and down in the grooved standard *n,n*; the moveable part enclosed within the standard being shewn by dots. This standard *n*, is situated about the middle of the machine, crossing it immediately under the cutters, and is made fast to the frame *a*, by bolts and screws. There is a lever *o*, attached to the lower cross rail of the standard, which turns upon a fulcrum pin, the extremity of the shorter arm of which lever acts under the centre of the sliding frame, so that by the lever *o*, the sliding frame with the bed may be raised or lowered, and when so raised, is held up by a spring catch *j*.

It being now explained by what means the bed which supports the cloth is constructed and brought up, so as to keep the cloth in close contact with the cutters, while the operation of shearing is going on, it is necessary, in the next place, to describe the contruction of the cutters, and their mode of working, for which purpose, in addition to what is shewn in the three first figures, the cutters are also represented detached, and upon a larger scale, in Fig. 9.

In this figure is exhibited a portion of the cutters in the same situation as in Fig. 8; and alongside of it is a section of the same, taken through at right angles to the former; *p*, is a metallic bar or rib, somewhat of a wedge form, which is fastened to the top part of the standard, *a, a*, seen best in Fig. 7. To this bar a straight blade of steel *g*, is attached by screws, the edge of which stands forward, even with the centre or axis of the cylindrical cutter *i*, and forms the ledger blade, or lower fixed edge of the shears. This blade remains stationary, and is in close contact with the pile or nap of the cloth, when the bed *k*, is raised in the manner above described.

The cutter or upper blade of the shears is formed by inserting two or more strips of plate steel *r, r*, in twisted directions into grooves in the metallic cylinder *i, i*, the edges of the which blades *r*, as the cylinder *i*, revolves, traverse along the edge of the fixed or ledger blade *g*, and by their obliquity produce a cutting action like shears, the edges of the two blades taking hold of the pi or raised nap, as the cloth passes under it, shears, c crops the superfluous ends of wool, and leaves the face smooth.

Rotatory motion is given to the cutting cylinder *i*, by means of a band leading from the wheel *s*, which passes round the pulley fixed on the end of the cylinder *i*, the wheel *s*, being driven by a band leading from the rotatory part of a steam engine, or any other first mover, and passed round the rigger *t*, fixed on the axle *s*. Tension is given to this band by a tightening pulley *u*, mounted on an adjustable sliding piece *v*, which is secured to the standard by a screw, and this rigger is thrown in and out of gear by a clutch box and lever, which sets the machine going, or stops it.

In order to give a drawing stroke to the cutter, which will cause the piece of cloth to be shorn off with better effect, the upper cutter has a small quantity of lateral actions, produced by the following means:—The axle of the cutting cylinder is made sufficiently long to allow of its sliding laterally about an inch in its bearings, and which sliding is effected by a cam *w*, fixed at one end.

This cam is formed by an oblique groove, cut round the axle, see *w*, Fig. 9, and a tooth *x*, fixed to the frame or standard, which works in it, as the cylinder revolves. By means of this tooth, the cylinder is made to slide laterally, a distance equal to the obliquity of the groove *w*, which produces the drawing stroke of the upper shear. In order that the rotation of the shearing cylinder may not be obstructed by friction, the tooth *x*, is made of two pieces, set a little distance apart, so as to afford a small degree of elasticity.

The construction of the cutters, and the mode of cropping or shearing the pile being explained, it is necessary, in the next place, to describe the manner of passing the cloth progressively under the cutters, which is done by the following means:—On the axle of the wheel *s*, and immediately behind that wheel, there is a small rigger, from which a band passes to a wheel *y*, mounted on an axle turning in bearings on the lower side rail of the standard *a*. At the reverse extremity of this axle, there is another small rigger 1, from which a band passes to a wheel 2, fixed on the axle 3, which crosses near the middle of the machine, seen in Fig. 8. Upon this axle, there is a sliding pulley 4, round which a cord is passed several times, and its extremities made fast to the ends of the sliding carriage *d*; when therefore this pulley is locked to the axle, which is done by a clutch box, the previously described movements of the machine cause the pulley 4, to revolve, and by means of the rope passed round it, to draw the frame with the cloth slowly and progressively along under the cutters.

The construction and action of the machine, and the manner in which the pile of the cloth is shorn by it, having been explained, it remains only to point out the contrivance whereby the machinery throws itself out of gear, and its operations are stopped, when the edge of the cloth or list arrives at the cutters.

At the end of one of the habiting rails *h*, there is a stop affixed by a nut and screw 5, which, by the advance of the carriage, is brought up and made to press against a lever 6, and an arm from this lever 6, acting under the catch 7, raises the catch up, and allows the hand lever 8, which is pressed upon by a strong spring, to throw the clutch box 10, out of gear, with the wheel 8, and hence the evolution of the machine instantly ceases. The lower part of the lever 6, being connected by a joint to the top of the lever *j*, the receding of the lever 6, draws back the lower catch *j*, and allows the sliding frame *l*, *l*, with the bed *k*, to descend.

By now turning the lower rollers *e*, *e*, another portion of the cloth is brought up to be shorn, and when properly habited and strained by the means above described, the carriage is slidden back, and the parts being all thrown into gear, the operation goes on as before.

The following is a letter forwarded to us upon the subject of the above trial, Lewis *v.* Davis.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN—This case was incorrectly reported in the newspapers; it turned on a point of law, and now remains for argument on a motion before the court. The importance of the case to patentees and to cloth manufacturers, may justify your insertion of the following particulars in the Journal of Arts, &c. &c. &c.

I am, Gentlemen,
Your obedient servant,
J. RAYNER.

London, January 21, 1829.

The following facts were established by the plaintiff's evidence, and the able argument of the learned counsel for the defendant.

First. That the triangular steel wire was not infringed.

Second. That the spring bed was not infringed.

Third. That the setting up brush was not used.

Fourth. That the rotatory cutter was not the invention of the plaintiff.

Fifth. That shearing cloth from list to list, was as old as the practice of shearing.

Sixth. That shearing cloth across from list to list by *machinery*, was done as early as the year 1798, by Mr. Harmer, of Sheffield.

Seventh. That the machinery of the defendant was admitted to be different from that of the plaintiff, and no one of their *three* special claims to invention infringed.

In the early part of this trial, and without hearing evidence for the defendant, the court ruled that the defendant had infringed on the plaintiff's patent, in the fact of *shearing from list to list by a rotatory cutter, without reference to the machinery, by which such shearing was performed.*

In proceeding to state the peculiar features of this case, I may shortly notice the opinion of former judges, as to what is laid down as the foundation on which patent claims ought to rest. "If principle alone be the foundation of a patent, it cannot stand; although the invention be a great improvement, it must be void, *ab initio.* The organization of a machine may be the subject of a patent, but principles cannot. A patent for the application of a principle, must be as bad as the principle itself. A patent for a *method only, cannot be supported*, without having carried it into effect, and produced some new substance."*

The claim for shearing cloth across from list to list by a rotatory cutter, must be taken to import either a new principle of shearing, or a new application of a *known principle* by *new* and *novel machinery*, by which such shearing is performed. There is no claim for a new principle of shearing by a rotatory cutter in the plaintiff's specification. The rotatory cutter was not invented by him, but by

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* See Mr. Justice Buller, Mr. Justice Heath, and Sir J. Eyre, in Bolton and Watt *v.* Bull, and Hornblower *v.* Bolton, where the principles on which the construction of the patent laws depend, are laid down at great length by the Court.

Douglas, or Mallroy, or some other person, as it appeared evidently to have been employed prior to the plaintiff's patent. There can be no claim for shearing cloth from list to list, that being the old and established practice of the trade.

The Patentee's claim must then be for the organized machinery, by which the operation of shearing is performed, and that such was the intention and meaning of the plaintiff is evident, for he claims, in his specification, the novel parts of his machinery, viz. *the triangular wire*; *the spring bed*; *the setting up brush*; *and the described method of* shearing across from list to list, also the method of shearing from end to end of the cloth; for he claims and describes the machinery, by which the operation in both directions can be performed.

The law, as laid down by the learned judges in the cases referred to, states that a patent for method can be good only when clearly described, and the description refers to an arranged and organized contrivance, by which the operation is performed, and the method applied in practice; and the special claims of a patentee are held to be found in the new and novel parts of such machinery. In the plaintiff's case, the rotatory cutter is not a new invention; the ledger blade is not new, the old shear had one. The carriage mounted on friction rollers is a modification of Harmer's carriage, and the *modus operandi* is from the same source, viz. the worm and wheel, and an arrangement of lines or cord to draw the carriage across from list to list. The perching bars and cloth rollers are taken from Harmer, improved by Dyer, of Wootton-under-edge, who had a patent in the year 1814. The central support of a narrow bed is found in Hart, Mallroy, and in Price's specification. The other parts of the plaintiff's machine are not [illegible] in the defendant's machine, viz. the triangular wire, the spring bed, and the setting up brush. But let us view this subject otherwise; take from the described method of shearing from list to list the rotatory cutter, which is not new, the direction of shearing from list to list, which is old; the carriage from Harmer; the cloth rollers from Dyer; and the three novel inventions of the plaintiff's, as above stated. Take all these away, and what then remains on which to establish an exclusive right? Why, truly, the application of a known cutting instrument to perform an old operation, in a direction old as cloth making. Such is the claim to the rotatory cutter for shearing across from list to list. The plaintiff's specification, however, does not claim generally the right to shear from list to list, but particularly the right to shear by *the described method*; the only fair interpretation of such language must be the plaintiff's right to shear by their *own described method of performing the operation*, viz. their own particular construction of the shearing machine; and it is difficult to conceive how this language can be construed to any other meaning. This being admitted, the defendant's case is proved. He shears from list to list by a rotatory cutter, it is true, but by the arrangement of other and different machinery, and does not use *any one of the inventions of the plaintiff*. If this new ruling of the learned judge be established as law, viz. the *application of method*, without reference to means or organization, the decision will be most favourable to patentees, and will increase the value of patent property; but the effect upon the cloathing trade will be inconvenient and vexatious, for there are no less than ten patents for rotatory cutters shearing across from list to list by different machinery, subsequent to that of the plaintiff's, and all must be equally liable to the plaintiffs *on this general claim*.

The *fourth* claim of the plaintiff's is difficult to conceive in connection with any novelty of invention, for the cutter and method of its operation are old; shearing across is old; there can, therefore, only remain the abstract principle or conception of a *junction of two old inventions, viz. the rotatory cutter, and shearing across the cloth.* If this ruling of the court be the law of the land, then are the principles of the patent laws much extended in their application.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—Having been subpœnaed on the late trial, *Lewis v. Davis,* for an infringement of a patent cloth shearing machine, claimed by the former, a two days attendance at Westminster brought me into conversation with many of the clothiers from the North and West of England, of whom I learned, to my great surprise, that a very general opinion prevails in the trade that the Messrs. Lewis purchased of the proprietors, *Mallory's patent,* which first contained the *rotatory knife or cutter, working against a fixed or ledger blade,* as applicable to the purpose of shearing or cropping of woollen cloths. It is high time, therefore, to contradict such opinion as totally unfounded, and to inform the public (that part of it connected with the woollen manufacture more especially), that an account will forthwith be published of certain transactions which took place in the year 1813, when a machine, constructed under the patent of Mallory, was sent by the proprietors into Gloucestershire, and which in its consequences has produced so memorable an era in the history of the cloth shearing machine. Since that period, the career of prosperity, *as machinists,* which has been run by the Messrs. Lewis, is pretty generally known. Indeed by the mouth of their leading counsel on the late trial, they have pro-claimed to the world that by this machine alone (they have other machines patented) they have already cleared upwards of *a hundred thousand pounds*, and the patent has yet between three and four years to run. A detail, therefore, of the previously connecting transactions alluded to will, it is presumed, furnish a pretty correct clue, by which to come at *the origin* of this, their adopted line of business, and by all their ideas of *improvements* upon cloth shearing machinery.

I remain, Gentlemen,
Your very obedient servant,
JOHN NORMAN.

No. 19, Brooksby Street, Islington.

P. S. A pamphlet was published some seven or eight years since, by Mr. William Davis (now of Leeds), in consequence of a rupture between him and the Messrs. Lewis, having previously been connected as partner in these patents for cloth shearing machines. I shall feel greatly obliged to any gentleman, who will have the goodness to favour me with one of these pamphlets, the title of which is, I believe, "the Rights of Davis asserted, against the claims of the Messrs. Lewis."

Court of King's Bench, Westminster, Jan. 20, 1829.
(Before the Lord Chief Justice.)

CROSLEY *v.* BEVERLEY.

THIS was an action brought for infringing a patent right, of which the plaintiff, Mr. Crosley, an engineer, is now sole proprietor. The subject was a gas meter forming one of the claims contained in the specification of a patent granted in December, 1815, to Samuel Clegg, under the title of "an approved gas apparatus." The inventions which constituted the leading features of this patent were, first, a flat retort, which was enabled to turn round upon a vertical shaft, for the purpose of bringing the coal gradually into contact with the fire, and which produced gas both superior in quantity and quality to any description of retort known at that time; second, an apparatus, by which lime and water of the consistency of cream could be employed for purifying the gas, and when saturated, the lime could be conveniently withdrawn, avoiding the nuisance of removing lime water when strongly saturated. Third, a rotatory gas meter, consisting of a drum wheel with several internal chambers, partly immersed in water; into which chambers the gas was to be passed by suitable tubes, and by exerting its elastic force against the surface of the water, and against the partitions of the chambers, the drum wheel was driven round, and the several compartments being thus successively filled with gas through certain apertures, and the gas discharged through other apertures, the number of rotations of the drum wheel (indicated by a dial) gave the measure of gas in gallons passed through the meter in any space of time. Fourth, an apparatus, called a regulator, to be placed between the gasometer and the supply pipes of the burners, for the purpose of neutralizing the effects of unequal pressure on the gasometer, thereby enabling the lights to burn without undulation. The only part of the patent right said to have been infringed was the gas meter.

The defendant, Mr. Beverley, of Leeds, is an engineer and manufacturer of a gas meter, which he called Malam's improved gas meter. It was admitted that Mr. Malam had suggested some variations in the construction of the plaintiff's gas meter, which rendered it more simple; but that the defendant having employed the hollow drum divided into compartments, which was driven round by the pressure of the gas in passing through it, and having also employed hoods or over-lapping plates, for the purpose of elongating the passages for the ingress and egress of the gas, thereby keeping one of the apertures sealed by the water, while another was open, both of which contrivances formed essential parts of the plaintiff's patent, it was therefore determined that the defendant had infringed the exclusive right of the plaintiff.

In defending this action, several objections were made to the validity of the patent. First, that the title stated an "improved gas apparatus," and the specification described several machines or apparatus to be employed in connection with the production of gas; but not one entire apparatus for performing the whole process of producing gas. Second, that the Patentee had introduced several modifications of his original invention into his specification, which had, in fact, been contrived subsequently to making the affidavit of his invention. Third, that the specification was not sufficient to enable a competent workman to make an effective apparatus, as some parts of the machinery of the flat retort would be subject to get out of order soon, if made in the way described; and there was no instruction how to remedy that evil. Fourth, that as the patent was for a gas apparatus, it ought to be capable of making gas from oil or resin or any other substance, as well as coal. Fifth, that no dimensions were pointed out in the specification, by which a meter might be made capable of supplying a certain number of burners, without previously trying experiments. Sixth, that a patent could only be maintained upon proof that the invention was useful to the public; and the defendant was in a situation to shew that parts of the apparatus had long been abandoned as inefficient.

When his Lordship was about to sum up the evidence, the jury expressed themselves unanimously of opinion that the defendant had infringed the plantiff's patent right, to which the bench immediately acceded; therefore, we were deprived of the benefit of his Lordship's opinions and observations upon the points objected to, and merely noticed, in the course of the trial, one remark from his lordship, (viz.) "it was a sad thing, that a valuable patent should be overturned, in consequence of an error or defect in one trivial point of the specification."

Recent Patents.

To Samuel Pratt, *of New Bond Street, in the Parish of St. George, Hanover Square, in the County of Middlesex, Camp Equipage Maker, for his invention of certain improvements on elastic beds, cushions, seats, pads, and other articles of that kind.*—[Sealed June 25, 1828.]

The subject of this Patent is to be considered as an improvement upon a former invention, for which a patent was granted to Mr. Pratt, on the 18th of October, 1826, embracing certain modes of constructing elastic beds, cushions, seats, &c. by the introduction of wire springs, within a wooden frame. (See Vol. XIII. of our First Series, page 117.) In the present instance, the wire springs are retained, but the wood work is altogether dispensed with, and the bed or cushion is made, in all respects, to resemble a bed or cushion stuffed with feathers or wool, as in the ordinary way. By constructing beds, cushions, pillows, &c. in this way, they will present no hard edges externally, and both sides will be alike equally elastic; they may, therefore, be turned over, and used on either side, which is a very desirable quality, and of great utility, particularly when employed as beds, seats, or couches for sick persons.

The patentee says, my invention " consists in a new method of making or manufacturing elastic beds, cushions, and other such articles constructed with wire springs, by which I afford a greater degree of elasticity, and avoid the inconvenience which has been heretofore experienced from the hard edges of wood framing, which I now dispense with.

" In constructing these beds, cushions, pillows, or seats for carriages, settees, coaches, chairs, or any other article of domestic use, requiring an elastic cushion, I first provide a sheet of canvas or sail cloth, or any other flexible material suited to that purpose, as a basis on which the springs are to be attached. This cloth I strengthen, by placing ribs of whalebone and cane, or any other elastic material round its edges, or round the form of the intended bed or cushion, and also across it in different directions on both sides of the canvas or sail cloth, and sew them together at the junction, and to the cloth. The breadth and length of the basis sheet must depend upon the intended dimensions of the bed or cushion, whether for one or two persons to lie upon, or merely as a seat, cushion, or pillow; and the strength of the springs must be varied accordingly, as a greater or less degree of resistance may be required.

" This foundation sheet may be made from various materials. I sometimes use mill board, but I prefer it to be perfectly flexible; and therefore in common employ, the sail cloth or canvas, and whale-bone or cane, as above described. Stout leather would answer the purpose, or thin slips of whale-bone or cane woven into a lattice work. A variety of other articles will also apply to this use, therefore, I do not confine myself to any peculiar material, but employ any flexible materials that may be found most advantageous and convenient of adaptation, to constitute the basis or foundation sheet, upon which the wire springs are to be fixed.

" Having prepared the stiff foundation sheet, as above described, and spread it out flat, I next take a number of spiral springs made of iron or steel wire, twisted into circular coils, in the shape of an hour glass, in Plate X. fig. 2; or, what is still better, springs made of wire bent into angles, instead of circular coils, as exhibited at Fig. 3. I have adopted a triangular form, but square or any other angular figure would, perhaps, answer nearly as well, provided the coils of the wire are so disposed, that being depressed, the coils will fall one within the other.

The foundation sheet being spread out flat, as above stated, any number of the springs may be placed upon it, at short distances apart; the number of the springs employed in making one bed or cushion, and also their necessary strength, must depend upon the size and required elasticity, for which no decided rule can be given, but it may be readily known by a very little experience.

The lower coil of each spring is to be fastened by sewing, or otherwise, to the foundation sheet, and to the whalebone bracing; and when they are all secured in this way, as shewn in the horizontal representation, Fig. 4, they are further confined by pack thread, or other small string, tied to the top coils, and extended diagonally from one to the other, bracing them all together.

On the tops of the springs thus secured to the foundation sheet, and braced together, I extend another sheet of canvas like the former, strengthened with ribs of whalebone and cane, as described above; and having sewed it to the upper coils of the springs, in the same way that the lower coils were secured to the foundation sheet. I then raise up the flaps, or overhanging edges of the canvas or sail cloth of the lower sheet, and sew it all round to the top sheet, and then the flaps of the top sheet to the edges of the bottom, enclosing the springs on all sides as a box, a longitudinal section of which is shewn at Fig. 5.

The internal part of the bed or cushion having been thus constructed, it is to be padded on the outside with wool, horse hair, or other elastic material, as stuffed seats are usually made; and upon this I put the canvas and ticking, cloth, leather, silk, or any other material, which is to constitute the external covering of the bed, cushion, pillow, or seat.

In making small pillows and cushions, I sometimes pass one half of each coiled spring through the foundation sheet, and secure it by sewing the sheet to the two central coils of wire, in the manner shewn at Fig. 6. The outer coils of the springs, both above and below, are then tied together in the way above explained, and a sheet of canvas covered over the whole, which is sewed to the outer coils of the springs; and when the seams are sewed up, so as to enclose the springs, the necessary paddings of horse hair or wool are laid on, and the cushion covered with canvas ticking, leather, silk, or any other suitable material, according to the will of the purchaser, or the purpose for which the pillow or cushion is intended to be used.

To CHARLES CARPENTER BOMBAS, *of the Inner Temple, Esq. for his Invention of Improvements in the Propelling of Locomotive Carriages, Machines, Boats, and other Vessels.* [Sealed 29th April, 1828.]

THESE improvements in propelling locomotive carriages, boats, and other machinery, consist in the employment of a power to be derived from condensed air or gas, which is to be contained in a strong cylindrical reservoir or vessel with spherical ends, and discharged therefrom, through tubes, in small quantities, into an engine, similarly constructed to a steam engine; and by the elastic force a piston is to be worked, which shall, by means of its rod, actuate a lever, or other mechanical contrivance connected to the wheels of the carriage, or boat, in any of the usual ways.

The dimensions of the cylindrical vessels intended to hold the condensed air or gas, are proposed to be from twelve to eighteen inches in diameter, and of any length which may be found convenient. Such vessels will not be too cumbersome for locomotive engines, and may be placed at certain stations on the road ready charged; at which stations the exhausted vessel may be removed, and a filled one be mounted on the carriage in its place.

The gas or air for supplying these reservoirs may be introduced by a fore pump, by mechanical means, or it may be generated chemically within the vessel. The state of condensation at which the gas or air is to be employed, may be from thirty to one hundred and fifty atmospheres, and it may be let out of the reservoir, through small pipes, to the working cylinder by valves, worked by the evolutions of the engine, by any of the modes or contrivances usually adapted to the steam engine.

No particular construction of carriage is proposed, nor of engine to drive it; but the compressed air is to be employed exactly in the same way as steam, and to work expansively, which is the subject matter of invention claimed. The same mode of employing condensed air to work an engine, is also applicable to propelling boats, and to every other purpose where mechanical force is required as a first mover. Of course, no particular construction of engine is proposed, nor are the modes of connecting the reservoir to the engine set out in any precise way.—[*Inrolled Oct.* 1828.]

To James Palmer, *of Globe Road, Mile End Road, in the County of Middlesex, Paper Maker, for his Invention of certain Improvements in the Moulds, Machinery, or Apparatus for Making Paper.*—[Sealed May 6, 1828.]

The first object of the inventor applies to a novel mode of constructing the wire gauze cylinders, which receive the pulp in paper-making machines; secondly, the wire gauze web, by which it is conducted to the filts; thirdly, the application of the same contrivances to making hand moulds.

In constructing the cylinders, a sufficient number of straight rods or wires, all of the length of the intended cylinder, and as many, in number, as when placed side by side will extend over its periphery, are to be laid out flat, and then laced together by fine wire carried round each one, and through the whole range crosswise, in several places. When the rods are thus connected, forming a sheet, that sheet is to be bent round a cylinder of metal or wood, as a mandrel, and the two outer edges united. Rims or wheels are then to be fixed in the ends of the cylinders, with a shaft or axle through the centre, which will make the wire roller complete, and fit for moulding paper in a paper-making machine, such as Fourdrinier's.

Another method of constructing the wire rollers is, by first winding a wire round a cylinder in a spiral direction, and then placing the straight rods upon the spiral wire, which are to be connected to it by soldering, and then, on withdrawing the mandrel, introducing the ends and axle, as described above.

A third method is, by the employment of a great number of small pieces of flat metal bars of equal length, with small holes drilled near their ends, through which rods of small wire are to be passed crosswise, so as to connect the pieces together in alternate positions, forming a sort of net or chain work. This, when so united, is to be bent round the mandrel, and formed into a cylindrical roller, with ends and an axle, as already explained. Ribs of metal are to be soldered on to the rollers at certain parts, for separating the paper into sheets, or a resinous material may be introduced into certain parts of the roller, for the same purpose.

The machine wire for conducting the paper from the moulding roller to the felts, is first described as formed of pieces connected together into a net or chain work, as explained above; secondly, by winding wire round a flat steel bar, and cutting the wire into links, which are to be joined and connected together by soldering, so as to form a net or chain-work; thirdly, by winding wire round a steel bar into spiral coils, and then uniting or linking the bent parts of similar coils to these, which will likewise form a net or chain work.

Moulds for hand making may be constructed by wires or small pieces united together in a net or chain work, in the same way as above explained. Pieces of metal are proposed to be employed as "*safety engine plates*," but in what way they are to be adapted to the engines are not shewn. [*Inrolled November*, 1828.]

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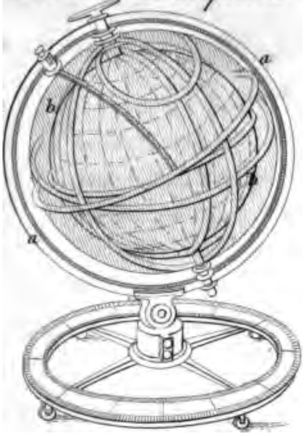
ASTOR, LENOX
TILDEN FOUNDATIONS

Muller's Cosmosphere.

Fig. 1.



Tilt's Salt-pan.

Fig. 10.

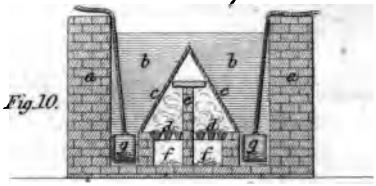


Fig. 9.

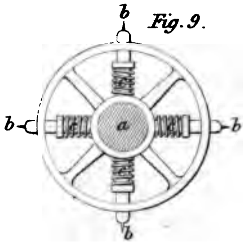


Fig. 7.

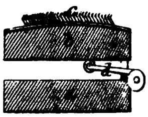


Fig. 2.

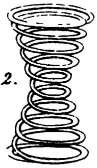
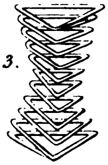


Fig. 3.



Savill's Apparatus for Dreſsing Cloth

Fig. 8.

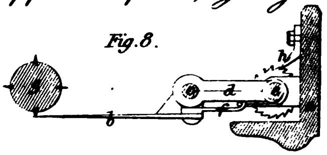
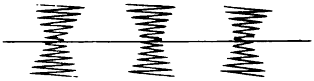


Fig. 6.



Pratt's Improved Beds &c.

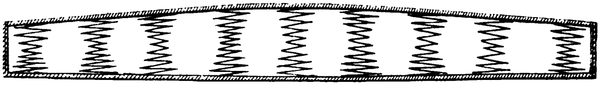
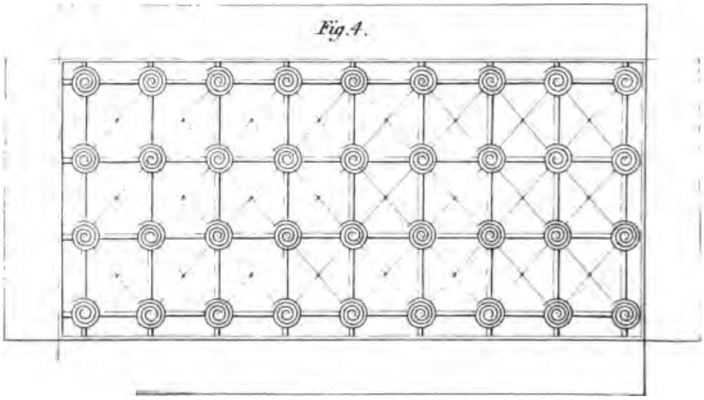


Fig. 5.

Fig. 4.



1st Feby 1829.

F. Mansell. s

To **William Muller**, *of Doughty Street, Bedford Row, in the County of Middlesex, Captain of our German Legion, for his having invented an Instrument or Apparatus for the Purpose of Teaching or Instructing in Mathematical Geography, Astronomy, and other Sciences, for the use of resolving Problems in Navigation, Spheres, and other Sciences.*—[Sealed July 10, 1828.]

This invention is a peculiar mode of mounting the artificial globes, celestial and terrestrial; the intentions of which are, first, to render the science of astronomy more easily understood by pupils; and secondly, to solve certain problems in spherical trigonometry.

Plate X, Fig. 1, represents the globe mounted cosmospherically, (as the Patentee denominates it.) Within the brass ring *a*, which is graduated, there is a glass sphere *b*, *b*, upon which are to be delineated the stars and constellations, representing a celestial globe. Upon this glass sphere are also to be placed the circular lines, that is, the equinoctial, the ecliptic, the colures, &c. similar to an armillary sphere.

This glass globe encloses the terrestrial, or globe of the earth, and for the convenience of adjusting it, may be made in two hemispheres, united at the equator; or, if of larger diameter, may be made of several portions.

Under some circumstances, it may be found inconvenient, expensive, and dangerous, to have glass spheres of considerable size; it is, therefore, the intention of the Patentee to mount some of his globes with spheres made of wire gauze, pressed to the proper form, and joined together. In that case, the stars and constellations are to be depicted on the gauze: or instead of this, a transparent paper, or other transparent matter, may be employed to form the spheres.

To the terrestrial globe within the celestial sphere, is to be adapted an horizon, suspended by slight arms, which is capable of adjustment, but turns with the globe, as it revolves on its axis within the sphere.

A quadrant of altitude is to be attached to the meridian, and extend to the horizon; the clamp of which is a tube, having a small telescope in the axis. This is for the purpose of shewing the azimuth, amptitude, altitudes, &c.

The globes as described, are furnished with suitable connecting parts, and contrivances for turning them upon their axes; the one independent of the other; and may be mounted upon a pedestal, with a circular foot as shewn, or may be suspended from the ceiling.

The glass sphere may be opened, and the terrestrial globe removed; in place of which it is proposed to introduce a planetarium, exhibiting all the planets and their moons, in their relative proportion of magnitudes and distances; or a tellurium, or lunarium.

It is unnecessary here to describe all the minor parts of the mounting, as they may be varied; or to explain the various problems which may be performed by the instrument, as, on inspection, that will be evident to an astronomer. The inventor has published a treatise on the subject, (" the Cosmosphere, an Instrument, &c. &c." 8vo. pp. 112. Richardson, Cornhill, London.)

There is also an instrument, described in the specificatian, called a *loxodromograph*, and another, called a *spherometer*; it is very imperfectly explained in the specification, but consists of several moveable semicircles, with graduations, to shew spherical triangles, &c. for solving problems in spherics.—[*Inrolled December*, 1828.]

To JOSEPH TILT, *of Prospect Place, in the Parish of St. George, Southwark, in the County of Surrey Merchant, in consequence of a communication made to him by a person residing abroad, for an invention of certain improvements in the boilers used for making salt, commonly called salt pans, and the mode of applying heat to brine.*—[Sealed April 4, 1827.]

THE principal feature of improvement proposed under this Patent consists in raising, what might be called the bottom of the boiler, up to an angular form in the middle, like the two upper sides of a prism; in order that the crystals of salt, as they become concentrated by the evaporation of the water, may descend down the inclined planes, and fall into boxes or troughs placed below.

Plate X, Fig. 10, shews a section taken transversely of a boiler constructed upon this improved plan. For the sake of convenience, the boiler is proposed, in general, to be erected in an excavation, so as to stand partly below the surface of the ground; *a, a,* are the side walls of the cistern, intended to hold the brine *b, b.* These walls must be properly coated with a water tight cement, and it is further proposed to place at the backs of them when erecting, a considerable quantity of clay, or some such material, as a preventive against leaking in case of fracture.

In the middle of the cistern, the prism formed bottom *c, c,* is constructed, consisting of sheet iron, which is erected over the fire place *d, d.* Between the two fires, a partition wall *e,* is placed, with a coping extending along the top. This coping is for the purpose of preventing the fire from acting with too great a degree of intensity against the upper part of the boiler; and *f, f,* are the ash pits below the fire grates.

At the bottom of the cistern, next its side walls, recesses *g, g*, are formed, for the crystals of salt to descend into as they become concentrated, and fall upon the inclined planes *c, c.* These recesses being below the fire, allow the salt to become cool. Boxes or troughs are to be placed in the recesses for the reception of the salt, and when they are full may be drawn up by the cords or chains attached to them, and the salt discharged without drawing off the brine from the cistern.

One particular advantage attendant upon the employment of this prism formed bottom to the boiler is, that the salt will not attach itself, but roll down as fast as its crystals form, thereby preventing an inconvenience called or known to salt makers by the name of *pan scratch.*

In the above described apparatus, furnaces are employed for heating the brine; but the same improved construction of boiler may be heated by steam. In that case, the triangular space, at present occupied by the furnaces, may be made a close vessel, without the ash pits; and pipes leading from a steam boiler may be introduced, for the purpose of conducting the steam, by which the plates *c, c,* will be heated, and the crystallization carried on in the way before described.

A method of withdrawing the salt from the boiler in which it was concentrated, was proposed by Mr. Parks, of Manchester, in 1823; and for which he obtained a patent, dated December 4, in that year, (see Vol. IX, First Series, page 247), but the plans of the present Patentee are very dissimilar from those of Mr. Parks, and cannot be considered to interfere with his previous patent.—[*Inrolled October,* 1827.]

To **Samuel Sevill**, *of Brownshill, in the Parish of Bisley, in the County of Gloucester, Clothier, for his invention of certain improvements applicable to raising the pile and dressing woollen and other cloths.*—[Sealed Nov. 20, 1827.]

One object of the Patentee is to give elasticity to the boards carrying the cards, which are frequently attached to gig barrels, and other rotatory machines for raising and dressing the pile of woollen cloths; but the principal intention appears to be to give elasticity to the ledger blades, and to the runner blades or rotatory cutters of shearing machine.

Plate X, Fig. 7, shews a cross section of one of the card boards; *a*, is the boar, which is to be fixed to the gig barrel, or other dressing machinery; *b*, is another boar, upon which the card *c*, is fastened. These two boards are connected together by a hinge joint, and between them is introduced a spring lever *d*. The action of this spring lever is obvious. Whenever the card *c*, is pressed upon with extraordinary force by the cloth, as the gig barrel goes round, the spring allows it to recede; and when on the other hand the cloth hangs loosely, the action of the spring forces the card up against it, and thereby keeps the points in contact with the cloth, the pile of which is under the operation of raising or dressing.

Fig. 8, represents a section of a rotatory cutter with its ledger blade and supports, the ledger blade, being so constructed, that it will give way to any unequal pressure of the rotatory cutter; *a*, is the bar to which the ledger blade is attached; *b*, is the ledger blade mounted upon pivots *c*, which turn in arms *d*. These arms are attached to a shaft *e*, turning in standards upon the bar *a*.

At the back of the ledger blade, there is a tail or lever *f*, acting against a spring coiled round the shaft *e*, by which means the ledger blade turning upon its pivots *c*, has its edge pressed up against the rotatory cutter *g*; but gives way to any unequal temporary pressure of the rotatory cutter against it. In order to give tension to the spring in setting up the ledger blade the shaft *e*, is turned round, and the ratchet wheel *h*, affixed to its end, is held by a pall *i*, screwed to the bar *a*.

Elasticity is given to the runner blades or rotatory cutter, by a contrivance shewn at Fig. 9; *a*, is the axle of the rotatory cutter; *b*, *b*, *b*, *b*, the edges of four cutting blades shewn in a section. Each of these blades are supported by several stems *c*, standing radially from the axle. These stems are pressed outwards by helical springs coiled round them, acting against shoulders, and are confined in their positions by being passed through holes in the rim wheel *d*, *d*.

The blades of the rotatory cutters thus constructed, when mounted in the machine, work with their cutting edges against the ledger blades, and on experiencing any extraordinary pressure from the ledger blade, are enabled to give way by being supported on the helical springs coiled round the stems, which carry them.

The claims of the Patentee to novelty in the construction of machines for dressing cloth, are, 1st, Giving elasticity to the cards by the spring lever acting under them. 2d. Giving elasticity to the ledger blades, by the tail lever acting against the spring coiled upon the shaft 3d. Giving elasticity to the runner blades, by mounting them on several stems, with helical springs under them. [*Inrolled May*, 1828.]

To SIR WILLIAM CONGREVE, *of Cecil Street, Strand, in the County of Miedlesex, Bart. for his having invented a new motive power.*—[Sealed February 8, 1827.]

THE nature of this invention has been fully explained by a correspondent in the XIIIth Vol. of the First Series of our Journal, page 153; but as the specification of the patent was not at that time inrolled, we feel it necessary again to advert to the subject, in order to fulfil our engagement of reporting the specification of every new patent.

The intention of the Patentee is, to take advantage of the philosophical principles of capillary attraction, by attaching sponge round the periphery of a drum wheel, partly immersed in water. The sponge on that part of the wheel which is intended to rise, must be compressed by mechanical contrivances, so as to render it lighter than the sponge on the opposite part of the periphery, in which the water is enabled to ascend by capillary attraction. Thus the weight of one part of the wheel where the sponge is filled with water, will be considerably heavier than the opposite part, and consequently will descend, causing the wheel to revolve on its axis, which revolution is intended to be communicated as a power to drive machinery.

These principles may be adapted in several ways, either by forming an endless band of sponge, which shall be passed over rollers, or by attaching the sponge to the periphery of a drum wheel; the sponge being embraced by an endless chain of weights, which by their gravity bear upon the sponge, for the purpose of expelling the water at that part which is to rise, and hang free at the descending part, in order to allow the water to fill the sponge, by capillary attraction; or the same effect may be produced by a series of weighted levers, made to press upward against the sponge, at the parts intended to rise.

As we have said, the Patentee's views are fully detailed in our 13th volume, to which we refer our readers ; and as the project is so exceedingly destitute of any prospect of practical usefulness, we consider it unnecessary to enter into the details any further.—[*Inrolled Aug.* 1827.]

Polytechnic and Scientific Intelligence.

The Performance of Steam Engines in Cornwall, for June, July, August, and September, 1828. *Communicated by* W. J. Henwood Esq. F. G. S. *to Brewster's Journal.*

Reciprocating Engines drawing Water.

Mines.	Diameter of cylinder in inch.	Length of stroke in cylinder.	Length of stroke in the pump.	Load in lbs. per sq. in. of area of piston.	No. of strokes per minute.	Millions of lbs. weight lifted 1 foot high by the consumption of 1 bush. of coal.
Huel Towan, -	80	10,	8,	10,1	6,5	78,8
	80	10,	8,	4,89	3,4	56,3
Cardrew Downs,	66	8,75	7,	10,1	6,4	58,
Huel Hope, -	60	9,	8,	9,9	5,8	70,7
Huel Vor, - -	63*	7,25	5,75	17,5	5,4	24,8
	53	9,	7,5	19,58	5,9	41,9
	48	7,	5,	7,9	4,8	30,7
	80	10,	7,5	14,8	6,	57,2
	45	6,75	5,5	13,6	6,1	49,9
Poladras Downs,	70	10,	7,5	8,63	5,3	48,4
Huel Reeth, -	36	7,5	7,5	15,29	3,1	25,5

Reciprocating Engines drawing Water.

Mines.	Diameter of cylinder in inch.	Length of stroke in cylinder.	Length of stroke in the pump.	Load in lbs. per sq. in. of area of piston.	No. of strokes per minute.	Millions of lbs. weight lifted 1 foot high by the consumption of 1 bush. of coal.
Balnoon, - -	30	8,	7,	5,	3,1	17,4
Huel Penwith, -	40	8,75	7,	4,	7,9	22,6
United Hills, -	58	8,25	6,	6,68	4,1	34,7
Great St. George,	60	10,333	6,5	9,4	5,6	31,1
Perran Mines, -	80	6,75	6,	9,1	7,2	23,
Crinnis Mines, -	53	8,25	7,	11,5	4,7	33,4
	56	6,75	6,75	9,9	4,1	26,9
Stray Park, -	64	7,75	5,25	7,5	4,4	31,6
Huel Penrose, -	36	8,5	6,5	9,8	6,9	32,7
Carzise, - - -	50	8,5	7,	7,34	4,6	34,
Huel Caroline,	30	7,	6,	26,	10,3	35,2
Huel Trevoole,	30	9,	7,	21,25	7,2	41,7
St. Ives Consols,	36	7,	7,	14,3	6,8	33,2
Lelant Consols,	15	7,5	4,5	16,1	2,7	11,9
Huel Damsel,	42†	7,5	5,75	21,5	5,8	37,9
	50	9,	7,	8,2	2,8	27,6
TangTing, -	63	7,75	6,75	14,2	7,5	44,3
Treskerby, - -	58†	7,75	6,	15,47	9,	38,3
Huel Chance, -	45†	7,918	6,	19,7	5,2	27,8
Huel Rose, -	45	8,	6,	18,	7,8	32,6
Huel Fortune -	45	8,	6,	10,2	7,9	36,5
Huel Beauchamp,	36	7,75	6,	12,3	4,2	30,8
East Huel Unity,	45	8,75	6,75	7,97	4,7	22,9
Great Work, -	60	9,	7,	8,9	6,9	40,6
Dolcoath, - -	76	9,	7.5	11,6	5,4	37,4
Huel Tolgus, -	70	10,	7,5	7,	3,7	48,8
Tresavean, - -	60	9,	7,	5,5	4,1	23,1

Reciprocating Engines drawing Water.

Mine	Diameter of cylinder in inch.	Length of stroke in cylinder.	Length of stroke in the pump.	Load in lbs. per sq. in. of area of piston.	No. of strokes per minute.	Millions of lbs. weight lifted 1 foot high by the consumption of 1 bush. of coal.
Huel Busy, -	70	10,	7,5	11,4	6,9	51,2
North Downs, -	70	9,83	7,75	7,9	5,1	39,6
Huel Harmony,	70	9,35	7,	5,	4,	29,
Huel Montague,	50	9,	7,	8,1	6,1	28,1
East Crinnis, -	60	5,5	5,5	8,57	4,7	22,9
	70	10,	7,	7,	5,9	36,4
Pembroke, -	80	9,75	7,25	11,27	4,3	47,1
	40	9,	6,5	6,1	2,	24,3
Huel Unity, -	60	7,	5,5	14,4	5,7	26,9
Poldice, - -	90	10,	7,	11,5	6,	51,2
	60	9,5	6,25	11,9	6,8	32,1
United Mines, -	90	9,	8,	7,9	5,2	36,2
	30	9,	7,5	12,9	8,3	34,1
ConsolidatedMines	90	10,	7,5	8,12	6,5	54,6
	70	10,	7,5	8,	7,4	44,6
	58	7,75	6,5	17,7	4,2	37,7
	90	10,	7,5	7,83	5,	62,9
	90	10,	7,5	10,6	4,1	31,6
	70	10,	7,5	8,8	4,7	56,1
Binner Downs,	42	9,	7,5	11,8	6,9	48,5
	63	9,	7,5	7,87	9,1	35,9
	70	10,	7,5	10,93	8,1	629

Average duty 38·2 millions of lbs. lifted a foot high by the consumption of each bushel of coal.

Watt's (double) rotatory engines working machines for bruising tin ores at

Huel Vor,	24	6.	6.	12.	16.8	18.2
	27	5.	5.	12.5	18.2	21.5
	16.5	5.	5.	8.5	25.8	14.3

Average duty of rotatory (double) engines, 18 millions.

* Engines thus distinguished are Watt's double.

† Those thus noted receive the steam first into a high pressure cylinder, whence it passes to a Watt's single engine, the pistons of both cylinders being connected with the same lever.

All the others in the preceding list are Watt's single engines.

New Patents Sealed in 1828.

To William Parr, of Union Place, City Road, in the County of Middlesex, Gentleman, and James Bluett, of Blackwall, in the said County of Middlesex, ship joiner, mast, block, and pump maker, for their having invented and found out a new method of producing a reciprocating action, by means of rotatory motion, to be applied to the working of all kinds of pumps, and other machinery, in or to which reciprocating action is required, or may be applied. Sealed 22d December—2 months.

To George Rodgers, of Sheffield, in the County of York, cutler, Jonathan Cripps Hobson, of the same place, merchant, and Jonathan Brownill, of the same place, cutler, for their having invented certain improvements of able forks. 23d December—2 months.

1829.

To Orlando Harris Williams, of North Nibley, in the County of Gloucester, Esq. for his having invented or found out certain improvements in the paddles and machinery for propelling ships and other vessels on water 7th January,—6 months.

To Septimus Gritton, of Pentonville, in the County of Middlesex, surgeon, and late of our Royal Navy, for his having invented an improved method of constructing paddles to facilitate their motion through water. 7th January—2 months.

To Francis Neale, of the City of Gloucester, barrister at law, for his having invented a certain machine, apparatus, or combination of machinery for propelling vessels. 7th January—6 months.

To William Taft, of Birmingham, in the Coanty of Warwick, harness maker and bridle cutler, for his having invented certain improvements in or additions to harness and saddlery, part or parts of which improvements or additions are applicable to other purposes. 7th January—6 months.

To Archibald Robertson, of Liverpool, in the County of Lancaster, ship carver, for his having invented certain improvements in the construction of paddles for propelling ships, boats, or vessels on water. 7th January—6 months.

To James Deakin and Thomas Deakin, of Sheffield, in the County of York, merchants and manufacturers of hardware, and co-partners, for their having invented certain methods of making from horns and hoofs of animals, various articles, namely, handles of knives, handles and knobs of drawers, and other parts of cabinet and household articles; curtain rings, bell pulls, door handles and knobs, key-hole escutcheons or coverings, for doors and window shutters, finger plates, knobs, and handles; all or any of which articles are to be so made of one or more piece or pieces of horn or hoof, of any shape or device, plain or ornamental, or inlaid, or conjoined with any kind of metal or other material. 14th January—2 months.

To John Dickinson, of Nash Mill, in the Parish of Abbolts, Langley, in the County of Hertford, paper manufacturer, for his having invented a new improvement in the method of manufacturing paper by machinery, and also a new method of cutting paper, and other material into single sheets or pieces, by means of machinery. 14th January—6 months.

To Thomas Smith, of the Borough of Derby, in the County of Derby, engineer, for his having invented or found out an improved piece of machinery, which being combined with parts of the steam engine or other engines, such as pumps, fire engines, water wheels, air pumps, condensers, and blowing engines, will effect an improvement in each of them respectively. 14th January—6 months.

To Chuck Hewes, of Manchester, in the County of Lancaster, engineer, for his having invented or found out, various improvements in the form and construction of windmills and their sails. 14th January—6 months.

To John Udney, of Arbour Terrace, Commercial Road, in the County of Middlesex, Esq. for his having invented certain improvements on the steam engine. 14th January 2 months.

To William Erskin Cockrane, of Regent Street, in the County of Middlesex, for his having invented an improvement in or on paddle wheels, for propelling boats and other vessels. 14th January—6 months.

To James Moore Ross, of Symond's Inn, in the County of Middlesex, ironmonger, for his having invented an improved tap or cock for drawing off liquids. 19th January—2 months.

To John Hopper Caney, of Aylesbury Street, Clerkenwell, in the County of Middlesex, for certain improvements in the construction of umbrellas and parasols. 21st Jan.—2 months.

French Patents

GRANTED DURING JULY, AUGUST AND SEPMEMBER, 1828

To Claude Jeanson, Paris, for machinery and a process to engrave borders on crystalor glass, of all dimensions. 10 years.
— Michel Abadie, sen., Tarbes, for an economical process to glue paper. 5 years.
—Alaxander de Stappers Tromecourt, Netherlands, for an hydraulic power he calls "Vifer," applicable to all moving powers. 10 years.
— Jean Batiste Guepet, Lyons, for a mechanical loom batten. 5 years.
— Joseph Antoine Grandval, Marseille, for new fitting bags to refine sugar. 5 years.
— Phillippe Mathieu, St. Christophe, for a method to teach orthography. 10 years.
— Dela Croix St. Clair, Orleans, for a machine to manufacture wire rails. 10 years.
— Eugene Bardel, Paris, for the application of the "Formicentenax," to manufacture plain and figured goods for furniture. 10 years.
— Caron de Vernon, Paris, for sundry means to save shipwrecked goods. 5 years.
— Jean Joseph Allard, Paris, for improvements in his lamp, 10 years.
— Jean Jeremie Poulliot, Paris, for sundry means for saving shipwrecked goods. 5 years.
— Garcin, Paris, for a machine he calls "cingar." 5 years.
— Nicolas Simon, St. Dié, for a moveable kitchen. 5 years.
— Gourju-Desroches, Paris, for a process to rectify sour wines. 10 years.
— Bronsac, Paris, for metallic shoes, he calls "chalcipode." 10 years.

To Bourasset, Paris, for an oil he calls " licac-lack," to preserve the hair. 5 years.

— Decrussy, Paris, for improvements in the " fixe-longe," to fasten horses.

— Massen, Vivien, Milan, Paris, for a new hydrostatic lamp. 5 years.

— Levelle, Paris, for a process to manufacture glue from skins. 5 years.

— André Millet, Paris, for an improved portable chimney. 5 years.

— Desjardin, Paris, for a floating bath tub. 5 years.

— Chambon, Alais, for a new mechanism and apparatus for drawing silk. 10 years.

— François Joseph Goetz, Paris, for a hygionic brush. 5 years.

— Louis Locatelli, Paris, for a new system of lighting streets, &c. 15 years.

— Frost, Father and Son, Strasbourg, for a pianoforte, called " Serène." 10 years.

— Cotto, Paris, for the manufacturing of toiles. 10 years.

— Nicholas Louis Roux, Paris, for a surety-lock. 5 years.

— Haetjens, Paris, for a machine to distribute the ink or colours in printing presses. 5 years.

— Garcon-Malar, Paris, for a spiral applicablo to ships. 15 years.

— Godefroi Lavigne, Nantes, for a coach door and step. 15 years.

— Hubert Forobert, Toulouse, for a lamp he calls " Lampe Hubert." 5 years.

— Dellouve, Paris, for pencil cases. 5 years.

— Vieillard, Paris, for a process to print music with moveable notes. 5 years.

— Reynier, Paris, for an extract of " Coffée-Chicorée." 5 years.

— Bernard Endigneux, Marseilles, for a process to manufacture " Sumac-malaga." 5 years.

— Louis Vauté, Nimes, for a loom to weave figured or fancy goods. 5 years.

— Vernay, Alais, for a machine he calls " Coupe-marriage," in drawing silks. 5 years.

— George Upton, London, for new lamps. 10 years.

— Berard and Moulin, Neufchateau, for a hydraulic machine. 10 years.

— Jean Victor Gallun, Grenoble, for a method to learn orthography. 10 years.

— Lebourlier, Paris, for a process to shell black pepper. 5 years.

To Desmonts, Paris, for a method to walk in the water upon the ice, &c. 5 years.

— Jean Henry, Petitpierre, Paris, for elastic clogs. 5 years.

— Foch, Toulouse, for a shearing machine. 10 years.

— Brosson, Paris, for a method to consolidate the particles of porous stones. 15 years.

— Jean Marie Pagnan, Paris, for a portable culinary stove. 5 years.

— Jean Julien Josseline, Paris, for mechanical cuffs in gown sleeves. 5 years.

— Louis Marie Rehairt, Paris, for a lamp with a constant level. 15 years.

— Thomas Talbot Harrington, London, for improvements in cables, &c. 10 years.

— Robequin et Jarlous, Paris, for a process to dye cotton black. 5 years.

— Magloire Ruac, Paris, for a specific to cure tooth-ache. 5 years.

— Richard Kendress, London, for a method to construct masts. 10 years.

— Debeciz, Paris, for a process to consolidate shoes and boots. 10 years.

— Pleyel et Comp. Paris, for improvements in piano-fortes. 5 years.

— Pierre Castel, Laresargues, for a wine distilling apparatus. 10 years.

— Jean Antoine Blanc, Lyons, for a mechanical loom batt. 10 years.

— Jean Baptiste Bureau, Nismes, for a proces to weave figured goods. 5 years.

— Joseph André Vincent, Lyons, for a shuttell. 5 years.

— Thiriet, Ramourt, for improvements in buckles. 10 years.

— Jean Dumarez, Paris, for improvements in looms. 5 years.

— Vinet-Buisson, Paris, for an improved lever in flour mills. 10 years.

— Veron, Paris, for a hydrostatic lamp. 5 years.

— Etienne Dive, Paris, for a nencausstic to preserve goods, &c. from damp. 10 years.

— Bernardet, Paris, for an apparatus to warm the feet without fire. 5 years.

— George Robert Skene, London, for improvements in paddle water wheels. 15 years.

— Jean Jubin, Lyons, for a process to bind carriage wheel rims. 5 years.

— Leger Clerc, Lyons, for a new shuttle, with retrograde motion. 5 years.

To Pascal Nicolas, Marseille, for a process to improve gelatine of bones. 5 years.

— Donald Currie, in England, for a process to preserve grain, &c. 5 years.

— Nant, sen. Lyons, for machinery to manufacture wire nails. 5 years.

— August Moinau, Paris, for a moving power, applicable to clocks, &c. 15 years.

— Jean Pierre Praget, Aix, for improvements in his distilling apparatus. 10 years.

— Thomas Stanhope Hollande, England, for an impulse motion. 15 years.

— Francois Casimir Bayeul, Rouen, for a method to preserve heat. 15 years.

— De Lubac Verneux, for surety guns. 10 years.

— Thomas Poleyard, Vienne, for a machine to give lustre to cloth. 5 years.

— William Reece, jun. Paris, for a new method to evaporize liquids. 5 years.

— Briant and St. Leger, Paris, for a hydraulic cement. 5 years.

— Debesiz, Paris, for a method to prevent any boat to be upset. 5 years.

— Lambert, Paris, for a new method of manufacturing brattelles, &c. 5 years.

— Caucheix, Paris, for in achromatic glasses. 10 years.

— William Church, Birmingham, for improvements in manufacturing buttons. 15 years.

— George Daniel Harris Stout, for improvements in preparing woollen yarn, and dressing cloth. 10 years.

— Antoin Hirsch, Bordeaux, for a typographic press. 5 years.

— Lacombe, son, Alais, for improvements in the mode of throwing silk. 5 years.

— Claude Fenian, Vandenesse, for a steam machine he calls "machine à recul." 15 years.

GENERAL ACCOUNT FOR 1828.

	Thermometer.				Barometer.					Winds.								
Month.	Hig.	Low	Mean.	Ran.	High.	Low.	Mean.	Ran.	Rain in inches.	N.	S.	E.	W.	NE.	SE.	NW.	SW.	
January	56	24	40,06	32	30,33	29,13	29,9172	1,20	3,725	–	–½	1	2	2½	6	–½	18½	31
February	55	20	40,16	35	30,37	28,94	29,7547	1,43	1,725	7	–	1	–½	1½	6	2	11	29
March	63	24	44,41	39	30,30	29,04	29,8500	1,26	,525	6	–½	–	6	1½	1	8	8	31
April	73	25	45,85	48	30,29	29,22	29,7638	1,07	2,835	5½	4	–	2½	2½	1½	1	13	30
May	72	33	55,51	39	30,29	29,40	29,8164	,89	2,075	4	1½	–½	2½	9	3½	1½	8½	31
June	80	40	61,88	40	30,29	29,29	29,9493	1,	1,850	2½	–½	1	3½	4½	3	6	9	30
July	83	44	62,28	39	29,98	29,24	29,6754	,74	4,25	–	2	–	1	1	2	6	19	31
August	75	41	60,39	34	30,26	29,36	29,8073	,90	3,05	1	–½	1	–½	2	5	5	16	31
September	74	36	57,79	38	30,31	29,39	29,8709	,92	2,	4	1	2	1	8½	3	1½	9	30
October	65	27	48,99	38	30,28	29,35	30,0097	1,03	1,125	1½	2	2	2	3½	3	4	13	31
November	60	12	42,96	48	30,26	29,22	29,8308	1,04	1,85	1	–	5	5	2	1	3	13	30
December	55	25	44,32	30	30,34	29,22	29,9102	1,12	2,45	1	2	1	–	–	4½	3	19½	
Year.	83	12	50,38	61	30,38	28,94	29,8463	1,44	27,460	33½	14½	14½	26½	38½	39½	41½	157½	366

METEOROLOGICAL JOURNAL, FOR DECEMBER 1828, AND JANUARY, 1829.

1828.	Thermo.		Barometer.		Rain in inches.	1829.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low	High.	Low.			Hig.	Low	Hig.	Low.	
DEC.						JAN.					
26	40	25	29,54	Stat.		11	34	27	29,96	29,83	
27	29	41	29,74	29,58		12	37	28	29,98	29,88	
28	43	34	29,94	29,80		13	38	33	30,02	30,00	,025
29	41	37	30,30	30,22	,125	14	38	29	30,02	29,97	
30	45	31	30,32	30,27	,025	15	39	31	29,88	29,70	,1
31	45	39	30,00	29,91		16	30	27	29,62	29,59	
1829.						17	32	25	29,76	29,74	
JAN. 1	47	33	29,83	29,76	,025	18	32	19	29,98	29,86	
2	47	33	29,81	29,77		19	32	16	30,07	30,03	
3	43	29	29,86	Stat.		20	33	15	29,99	29,90	
4	42	32	29,58	29,30		21	29	25	29,87	29,78	
5	35	31	29,80	29,66	,45	22	29	19	29,73	29,62	
6	35	25	29,92	Stat.		23	24	21	29,56	29,50	
7	36	20	29,90	29,83		24	27	18	29,55	29,50	
8	32	28	29,79	Stat.		25	26	19	29,61	29,58	
9	38	30	29,73	29,61							
10	37	30	29,62	29,56							

LOWER EDMONTON. CHARLES H. ADAMS.

Lat. 51° 37' 32" N. Long. 3' 51" W. of Greenwich.

CELESTIAL PHENOMENA, FOR FEBRUARY, 1829.

D.	H.	M.	S.	
1	10	0	0	♂ in conj. with ε in Pisces.
2	17	0	0	☾ in conj. with β in Capri.
3	14	31	0	Ecliptic conj. or ● New moon
4	16	0	0	☽ in conj. with δ in Aquarius.
5	0	0	0	Clock before the ☉ 14' 24"
5	10	0	0	♂ in conj. with ζ in Pisces.
7	19	0	0	☽ in conj. with ζ in Pisces.
7	21	0	0	☽ in conj. with ♂ long. 19' in Aries. ☽ lat. 59' N: ♂ lat. 9' diff. lat. 50'
8	8	0	0	☽ in conj. with ο in Pisces.
10	0	0	0	Clock before the ☉ 14' 37"
10	0	0	0	☿ in conj. with λ in Aquarius
10	4	23	0	☽ in □ first quarter.
11	7	0	0	☽ in conj. with 1 δ in Taurus
11	7	0	0	☽ in conj. with 2 δ in Taurus
11	12	0	0	☽ in conj. with α in Taurius
15	0	0	0	Clock before the ☉ 14' 29"
15	18	0	0	♀ in conj. with ♅ long. 2, in Capri. ♀ lat. 24' S. ♅ lat. 34' S. diff. lat. 10'
16	16	0	0	☽ in conj. with 1 α in Cancer.
16	17	0	0	☽ in conj. with 2 α in Cancer.
17	10	0	0	☽ in conj. with ξ in Leo.
17	15	0	0	☽ in conj. with ο in Leo.
18	1	0	0	☽ in conj. with π in Leo.
18	7	15	0	Ecliptic opposition, or ○ Full Moon.
18	8	24	0	☉ enters Pisces.
19	0	0	0	☿ Stationary.
19	23	0	0	☾ in conj. with π Leo.
20	0	0	0	Clock before the ☉ 14' 4"
21	23	0	0	♀ in conj. with δ in Capri.
22	5	0	0	☾ in conj. with θ in Virgo.
23	13	0	0	☾ in conj. with κ in Virgo.
25	0	0	0	Clock before the ☉ 13' 22"
25	4	0	0	☾ in conj. with γ in Libra.
25	13	0	0	☾ in conj. with θ in Libra.
26	5	0	0	☾ in conj. with φ in Oph.
26	8	20	0	☾ in □ last quarter.

☽ The Waxing Moon.—☾ The Waning Moon.

Rotherhithe. **J. LEWTHWAITE.**

THE

London

JOURNAL OF ARTS AND SCIENCES.

No. XII.

[SECOND SERIES.]

Original Communications.

ART. XVIII.—ON THE LAWS RELATIVE TO PATENTS FOR INVENTIONS.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—I regret to trouble you again with communications of my thoughts on Patent Laws, but your Journal of this month has brought new ideas to my mind, which more clearly develope to my view what our present judges conceive to be a proper foundation for Patent right. If my conjecture on this head be correct, then I hope that you will find its explanation worthy of a place in your valuable Journal.

Before I proceed on this point, I must beg leave to say that "Vindicator" mistakes, in thinking that I infer that Patents are granted in the shape of rewards. I am not aware of having stated anything which can lead to such a conclusion; but on the contrary, when I stated the transaction of applying for, and obtaining a Patent to take place in the shape of a bargain, where one consideration is given for another, *reward* is out of the question.

But, although I cannot agree with Vindicator upon all the points in question, yet I freely allow that I find much good and sound argument in his statements, and I fully agree with him in the main point, namely, that salutary changes in the Patent Laws are highly necessary.

Now to the point of our present laws; I see it laid down as law, that the discovery of existing principles is not patentable; but a method of making principles subservient in a practicable way to certain purposes, if that method be new, the Patent is good. To understand this clearly, a true definition of what is meant by "principle," is absolutely necessary. On due reflection, I find that a principle is the immediate cause of the effect brought in question. Thus, by saying that a cask may be moved forward on various principles, namely, on the principle of *rolling* it forward, or on the principle of *pushing*, or *shoving* it forward, or on the principle of *carrying* it forward; in every case the rolling, shoving, or carrying, are so many different causes, which would produce the effect of bringing the cask forward; and suppose it not to be generally known that any such cause would produce such said effect, and that a person obtains a Patent for having found it out, such Patent would be bad; but if the Patent were taken for a new method to produce such cause, in other words, to bring such cause into operation, that Patent would be good.

So may it likewise be said, that a knife may be sharpened by a stone on two principles—either by drawing the knife laterally over the surface of the stone, or holding the knife against the surface of a revolving round stone; both are causes of the knife getting sharp; and the discovery of such causes, were they not known, are not patentable; but if a Patent be taken out for a method of moving the stone for that purpose, or of passing the knife over a stone, the Patent would be good.

Now, Gentlemen, before I go any further, permit me to ask is it right, is it wise, or is it equitable, that such should be the law? I will at once prove to you how the discovery of an existing principle, but not yet in practice, may be as useful to the public as the discovery of a method. In so doing, I will have recourse to my own invention.

The best mode of sharpening a knife, is to draw it over the surface of a suitable stone, or emery coated substance, from heel to point, in such lineal direction, as forms an angle of 45 degrees, with the breadth of the knife. By moving a knife laterally, and in contact with a revolving stone, in the usual way, the desired grinding lines are obtained. But an evil exists in this, and other modes of sharpening knives—the edge is always more or less turned, contrary to the grinding side. To obviate this, I have found out, that if two stones are turned in contrary directions, their peripheries slightly touching each other, and the knife drawn at right angles with the stones at about the place where they touch, and being prevented by a fixed rest from being *drawn betwixt* the stones, it will most effectually, and in the best way be sharpened. Now here is a useful principle, but not patentable. Thank goodness, I have not purchased a Patent for it; and if it is worth anything, the public are welcome to it, gratis.

Next, I would ask, whether it is just and equitable, that a poor industrious man, having discovered an unknown useful principle, under the impression that he is quite in order, applies for a Patent to such officers of the Crown, who ought to know that such Patent is not tenable; and yet, that such officers should not only pocket the poor man's money, but thereby, perhaps, cause his utter ruin! I particularly beg not to be misunderstood; I do not mean to cast the most distant reflection upon the conduct of any officer or judge; or, indeed, any one in Patent proceedings, but solely on the miserable legal usage of granting Patents, as it now stands.

I further wish to show how ambiguous the meaning, or conception of " principle" and " method" is, and how very difficult, I may say, almost impossible, it is to determine with precision, what is " principle" or " method;" their meanings are as relative, as those of " cause" and " effect." In all movements, combination of movements, or actions, for some fixed purpose, only one real first cause creates its existence, and that cause is impenetrably hidden from all human conception, understanding, or scrutiny; but as the movement, which we do see, produces further consequences, we find it convenient to call such movements " causes," and their consequences " effects." In many cases such effects produce further consequences; then these last mentioned effects turn again into causes, whereof the last mentioned consequences are the effects, and so on.

Let us suppose a train of causes and effects in operation, to produce a fixed ulterior object, the last cause then, which preceded the object produced, and which in its effect, is to all intents and purposes, the principle upon which the object has been produced, and the cause through which the before mentioned cause was produced, must be the method. For instance, let us take the steam engine; the fire causes steam, the steam causes inequality of pressure, that again causes the beam to move, &c.

Now, may it not be stated thus, " the beam is moved upon the principle of unequal pressure, and the method to produce this unequal pressure is by means of heat, evaporating water, and introducing the steam, &c." Likewise "the piston is moved upon the principle of causing as much vacuum over or under it as possible, by introducing steam, &c. &c., and the method of doing so is by boilers, pipes, air pumps, &c." Query—Was Bolton and Watts's Patent grounded on the principle of forming a vacuum, or the method of producing that principle?

Considering further, that "principle" is not patentable, but that "method of application" is, most lamentable consequences present themselves to my view; mechanical methods for the application of principles may be so much varied, that after a Patent shall be obtained for one, a number of other Patents may be had and considered good for the same object, to the great prejudice of the first meritorious inventor, by only varying the method of application*; but, what above all is most striking, is that the greatest and most eminent lawyers of the kingdom find it good that the Patentee puts at the end of his claim in his specification, the following words, namely, "the way in which I do perform, or work my said invention of * * * * *, I have clearly set forth and shewn in this, my specification; but I also reserve to myself the right of working the same by any other method or methods, through which the same principle shall be produced," or other words to that effect; and I repeat, that if such right were not reserved, many of the most valuable inventions could absolutely not be made secure to the inventor. What jargon! What contradiction! The more I read, and the more I hear of Patent Laws, the more I find perplexity exemplified! Seeing thus how inadequate the limited faculty of our understanding or reasoning is to the formation of precise and intelligible definitions of what shall constitute Patent claims, and infringements, would it not be best to leave the judging of them to such men as may be generally acknowledged less liable to err in their ideas of what is reasonable and right, than to such as had no opportunities of making those matters their chief studies? I allow, that if a better mode could be found out, it were well to reject my suggestion, which is far from being desirable, if not driven to it by necessity; but so long as I shall not see a preferable and practicable way pointed out, I cannot alter my opinion on this head; I also repeat what I mentioned in a former communication, that seeing how very difficult it is for any man to judge whether his claim for a Patent is good or not, he should, on application, be informed of it by proper authorities, without being subjected to heavy losses, and after, perhaps, having laboured for years, and expended a fortune in perfecting an invention, which ultimately is determined by a court of law to be an infringement in principle upon something which has gone before.

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* See the case stated in our last, as respects shearing machines on a rotatory principle.

I am, Gentlemen,
Your most obedient servant,
M. De Jongh.

Manchester, Feb. 5, 1829.

Art. XIX.—On the Laws relative to Patents.

To the Editors of the London Journal of Arts, &c.

Gentlemen,—The earnestness of your correspondents, and the space you have devoted in your valuable work to the discussion of the "*Laws relative to Patents,*" is a proof of the increasing interest felt on the subject; and that the cause of scientific reformation is advancing, may be fairly inferred from the numerous points of agreement in the communications of your correspondents.

That the "laws relative to Patents" are anomalous in their character, doubtful in their interpretation, and frequently injurious and oppressive in their application, is a *fact* generally admitted; and that they were founded on views and feelings at variance with the present enlightened state of society, is a truth, too obvious to stand in need of the *argumentum ad hominum.*

At a period of the world, when the "march of intellect," and the expansion of the human faculties are directed to the investigation of facts and principles—when the phenomena of nature and her elementary powers—the "great globe itself"—its ponderous material and various productions, are all laid under contribution by the ingenuity of man, to supply his wants, or to promote his interests—to increase his resourses, or to raise his condition: in a state of society, when the inventive powers are sharpened by necessity and excited by competition, when improvements in the arts are available as matters of business, and needful to keep pace with the progress of civilization, is it just and right that absurd laws, founded on corrupt and oppressive principles, should at once be expunged from the national code, and replaced by others more correct in principle, less expensive in operation, more facile in their application, and more efficient in their protection of a highly meritorious and deserving class of individuals, to whom this *great country* is chiefly indebted for its present high rank among nations. It is to our Arkwrights, our Watts, our Peels, and our Bakewells, that we owe the unparalleled extension of our commerce, the increase of our manufactures, and the improvements in agriculture—the inexhaustible resources of our power and prosperity.

It is to impressions and feelings of this character, that we may attribute the approximation in opinion, that appears to be generally entertained on this subject; and your correspondents are agreed, that an alteration in the "Laws relative to Patents" ought to be made, that a *new court* for the *adjudication* of the *claims of Patentees* has been shewn to be needful, and allowed to be practicable, that the expenses should be greatly reduced by the abolition of official fees, that when a Patent is obtained, the protection of the grant should secure the property from infringement and piracy, so far as just and equal laws are capable of doing, without the necessity of expensive law suits. But it is on the details of this measure, and the powers with which such a court ought to be invested, that your correspondents are at issue.

"Vindicator" appears quite alarmed at the idea of the commissioners having the power to refuse the grant of a Patent on application; and another of your correspondents thinks it highly objectionable, that the "researches and ingenuity of the whole country should be under the controul of a few men, whose acquirements and views, from the nature of man, would be limited and partial."

This appears to be anticipating an evil, which there is no just ground to suppose will exist. The reduction of the expense and charges for patents, will assuredly increase the number of applicants, many of them in the lower ranks of life, whose reading and experience may prevent their knowing of the previous existence of a Patent, or the practice of a particular process for which they apply; and as prevention is a preferable remedy, so the wholesome and impartial refusal of the commissioners may save the applicants much vexation, disappointment, and expense. The same circumstances may occur to the best informed persons, and the superior knowledge and information of the commissioners, would be beneficially exerted in protecting their property, by refusing the grant.

Again, in cases of applications for trivial and unimportant objects, the refusal would operate beneficially upon society, by saving expense and litigation. I grant that such a power should be exercised under *due limitations.* The fact of the invention or process not being new, should be *clear* and *obvious,* and the *reasons* for the *refusal distinctly stated* to the applicant; and an appeal from the decision of the commissioners might be made by affidavit to the Court of King's Bench, who might direct a *mandamus* to compel the commissioners to grant a Patent, should the court see just grounds for so doing. This provision, it appears to me, would meet the objection of your correspondents, and secure for the Patentee the due administration of justice.

A Patent Grant from the Crown appears, to my apprehension, in the light of both a *reward* and a *bargain* ; a reward, because the Patentee has the sole privilege for the given period; and a bargain, because His Majesty secures for the public the full and particular description of the discovery, and the law ought to give in return *protection* and *security.* In this case, there is the *quid pro quo* in the reciprocity of mutual benefits, and the grant should not be made, unless the applicant can give some valuable invention for the exclusive rights received by his Patent.

Your eloquent correspondent, Vindicator, strongly denounces monopolies, and conceives that the grant of Patents under the great seals or otherwise, are the last remains and worst features of that scandalous system that oppressed the nation, under the reign of the Tudors and the Stuarts. He displays an intimate acquaintance with the subject, and is so luxuriant in phrases, so prolific in terms, and so appropriate in designation, that one is almost tempted to think him *one of the initiated*; the " capacious hanaper of Chancery," the " wide gaping bottomless coffers of the Royal treasury," are topics on which he loves to dilate, and like another Hercules, is ready to apply his powers in cleansing this *Augean Stable*, "the capacious hanaper."

But surely, Vindicator does not intend to question the propriety of a Royal grant, in the shape of a Patent for valuable discoveries; if so, how is genius to be rewarded, and inventions to be fostered and encouraged. Surely he ought to have supplied us with a succedaneum, more favourable to the objects proposed, and given us an account of the law he would submit; perhaps, in a future Number, he will favour us with the details of his plan. But until something better is proposed, I must beg to concur generally with the plan suggested by Mr. De Jongh. It appears sound and practicable, and calculated to answer the end proposed, by giving security and protection to Patent property; and the commissioners appointed under such an act are not more likely to abuse their important trust, than the Commissioners of Bankrupts, or the magistrates of the country; and if an error in judgment should occur, or any deviation from the principles of justice be manifest, the means of correcting such error or mistake should be opened and directed to the parties aggrieved.

In order to give this subject a practical direction, let the suggestion of your correspondent R. be attended to, and a petition be presented to Parliament forthwith, that the House would immediately appoint a committee to inquire into the laws affecting Patents, with power to examine evidence, and report thereon. It is here that the various opinions of correspondents may be collected, and the result, it is presumed, will be beneficial to the country, by arranging and settling a new code of scientific laws, calculated to give protection and encouragement to the extending knowledge of practical arts and useful manufactures.

I ought to apologize for occupying so many of your pages, but would just suggest, in conclusion, that the spirit of improvement is abroad, and the present period appears favourable to the attainment of the object, and that active means should forthwith be adopted to bring the subject before the House of Commons.

I am, Gentlemen,
Your obedient Servant,
J. RAYNER.

King Square, Goswell Road,
Feb. 11, 1829.

ART. XX.—ON THE FEES AND CHARGES UPON PATENTS FOR INVENTIONS.

> " They deal in lawful mysteries,
> And claim state duties and their fees."—HUD. page 3.

To the Editors of the London Journal of Arts, &c.

GENTLEMEN,—I believe those who have had the satisfaction of paying the *legion* of fees demanded for *securing* these inventions, and the public generally, are equally uninformed as to the amount, nature, and appropriation of these *prerogative* aids, to the perennial quantum of venison, champagne, livery, and lace, necessary to the accurate discharge of high official duties.

In pursuance of the implied engagement in my first letter, I purpose lifting, with cautious hands, and modest approach, the veil which separates these arcana from the inquisitive eye of *impertinent* curiosity. I know that I am treading upon consecrated ground, but as I have put one foot upon it, the other very naturally follows its mate. " What are you about there, Sir?" says his employer to John. " *Nothing*, Sir!" and what are *you* doing, Thomas?" "Helping John, please your Honour!" Here is the text and summary of the heavy duties performed in the progress of a petition for a "*Patent*," always excepting those of the pedal organs of the indefatigable solicitor, which vibrate with such interminability of action between office and office, as fairly to entitle him to the parliamentary reward for perpetual motion.

I propose a "*dissection*," Gentlemen; be not alarmed, (I do not mean an anatomical dissection, the present terror of all the old women of the kingdom) of the *regular* charges and fees for a Patent; and then, a notice of those which occasionally occur, to conclude with a general average of the annual account, which John, Thomas, *et multis aliis* receive, for the important services they render to the talent of the country.

We will begin with the Secretary of State's Office for the Home Department. Here a petition to the King is to be lodged, drawn in courtly phrase, and with as good grammar and orthography as may be, but without punctuation, as that only serves to make law proceedings too intelligible. This petition prays His Majesty's Royal Letters Patent under the great seal, for some invention, to be hereafter described in the specification.*

The petition, with affidavit of invention, upon payment of £.2 : 2 : 6. is referred to the Solicitor or Attorney-General, who of *course* (no obstacle intervening, as an opposing petitioner), recommends to his Majesty, the grant of the Letters Patent. This recommendation sets the machine in motion; it is *vis inertiæ*, the *primum mobile* of the wheel work. Upon its delivery at the Secretary of State's Office, a warrant to the Attorney or Solicitor General is issued, commanding him to prepare a *bill* for the Royal signature to pass the great seal. The amount of fees paid upon delivery on this warrant is £. 7 : 13 : 6. and upon the bill receiving the sign manual, the further sum of £. 7 : 13 : 6.

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* I beg to apprize novices, that according to the present practice, the *title* of the invention, and its *description*, need have as little relation to each other, as the hyperbolic curve has to a right line.

The total amount of fees paid at the Secretary of State's Office for doing these *sundry* nothings, is £. 17 : 9 : 6. The expenses of his office is paid by the treasury, and therefore the above sum is one of the "*prerogative aids.*"

We will now pay a visit to Mr. Attorney or Solicitor General. (The ambulatory Solicitor of the Patent has already paid many before us.) For Mr. Attorney's accommodating report, stating his opinion of the utility of the invention, and recommending the grant of the Letters Patent, a charge of four guineas is made. Guineas are now out of date. I suppose, therefore, Mr. Attorney is contented to bag four sovereigns, lawful coin, and four good shillings, as I never heard of a lawyer losing his fee, excepting the *poor late* Lord Chancellor, who feelingly laments that forty years ago, he *once* took a brief with the *promise* of his fee. The clerks of Mr. Attorney are now employed in drawing and preparing a long verbose tautological BILL, one of the "*nothings*," or worse than nothing, as to its necessity; an amiably uninteresting profusion of words, for which, including the organized matter, called paper, upon which they exhibit their *classic* arrangement, and unideal periphrase, the *moderate* charge of £. 18 : 19. is made. I beg pardon, *was* made, for about three or four years ago, a kind of explosion took place, which detached three guineas from this impudent extortion, and blew them *in nubibus.* Upon the *legality* of the demand of these and other fees and charges, I shall make some observations at a future opportunity.

The charge now made for this precious document is £. 15 : 16., and a further sum of £. 1 : 1. for engrossing, *i. e.* for swaddling the beautiful babe in clean clothes; it is then carried, first to the Lord Keeper of the Privy Seal, then to the Secretary of State, who are the bantling's sponsors, and who undertake for it, previously to its christening, *alias* to its receiving the Royal sign manual, that it contains in its body no treason, sedition, privy conspiracy, heresy, schism, or *emancipation clause*; but on the contrary, that it is a legitimately formed, right-loyal, and right-royal *incubus*. The total charge of Mr. Attorney-General for his *lying-in*, and for caudle, before the birth, is at present, since the explosion, £. 21 : 1.

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" *Proceed, we now*, (as the parsons say, after taking a little breath, or fumbling their leaves in vain for a passage, which they have written in an unconsecutive position to the last sentence,) " *to the next head of our discourse*."

We will accompany the perambulating perpetual motion, now charged with Mr. Attorney-General's beautiful production, to the Signet office, a commodious apartment in Somerset House, *not* a Royal residence, although intended as such; for Royalty prefereth to fix its seat in the Pontine marshes of Pimlico; and there we deliver the offspring to the custos of its sponsor, my Lord Privy Seal, who (I believe) *makes out a warrant* to *himself* to pass on the bantling to its other sponsor, for which extraordinary piece of service, £. 3 : 1. is charged; and an additional fee of £. 1 : 1. is paid, as *gratuity*, (to whom I cannot learn;) but this being a *privy* affair, I wish courteously to abstain from an appearance of inquisitiveness. An additional fee of 5*s*. is paid to the Office Keeper. In the same building is the proper office of the Privy Seal, wherein a warrant to the

Lord Chancellor, or Lord Keeper of the Great Seal, is prepared to pass the Patent; for this, £.2 16. is charged, and also another gratuity of £.1 1. to whom I forbear inquiring for the above reason, also 10*s.* 6*d.* to the Office Keeper.

The amount of fees, &c. paid at the Signet Office is £.4:7. and at the Privy Seal £.4:2. making together £.8:9. Now peradventure, it happeneth that my Lord Privy Seal sleepeth or journeyeth far away from the city smoke, and in such cases, his deputy must journey after him with the documents, at the expense of the Patentee, to the amount, in some instances, of £.5, which matter we shall notice under the head of *irregular* fees.

Gentlemen visitors and reformists! We are now about to enter the *sanctum sanctorum* of the edifice, to worship in amazement at the shrine of mysteries, to touch and handle that most curious and intricate work of *art*, the palladium of mystification. We will enter with cautious but determined step, the dens of Chancery. Trust to my guidance, Gentlemen, and although there be bags, baskets, boxes, and hanapers, capaciously formed to receive ye all (I mean your money), and *sealers*, to put wax and pitch-plasters upon ye, I hope to bring you safely out of your perilous situation, after a most interesting peep at the machinery, by which the system works. But in order to allow you a little time to clear your optics, I will take a short leave, remaining for the present,

Gentlemen,

Your most obedient servant,

VINDICATOR.

ART. XXI.—ON DANIEL'S PATENT APPARATUS FOR GENERATING GAS FROM ROSIN, AS CONSTRUCTED BY MR. MARTINEAU, FOR THE LONDON INSTITUTION, WHERE IT IS IN CONSTANT USE.

THE employment of gas illumination for domestic purposes, may justly be considered as one of the proudest triumphs of the chemical philosopher. Previous to the introduction of rosin gas, this desideratum could hardly have been considered to have been effected. The sulphureous vapours that were continually exhaled from the partially purified gas, produced by the decomposition of coal, soon caused it to be ejected from the interior of those royal and noble edifices, where it was adopted in the infancy of the process. It is true that this is better managed in the present day, although we seldom find that the public companies supply it pure for any continuance.

The *oil gas*, although costly, was infinitely better calculated for in-door illumination; and Mr. Pepys, of the London Institution, was mainly instrumental in introducing it to the notice of the public, through the medium of that Establishment.

The same distinguished chemist also suggested the use of gas from rosin in the Institution, and Mr. Daniel liberally permitted the Board of Management, gratuitously, to employ an apparatus under his patent, the economy of which, and the excellence of the process, is now satisfactorily ascertained, and we shall presently furnish data for placing this fact in the clearest point of view.

Plate XI, exhibits the retort and its appendages, as erected at the London Institution. The front elevation, Fig. 1, represents an external view of the apparatus; *a*, the iron tank, in which the rosin is melted, with a given

Daniel's Rosin Gas Apparatus.

Fig. 2.

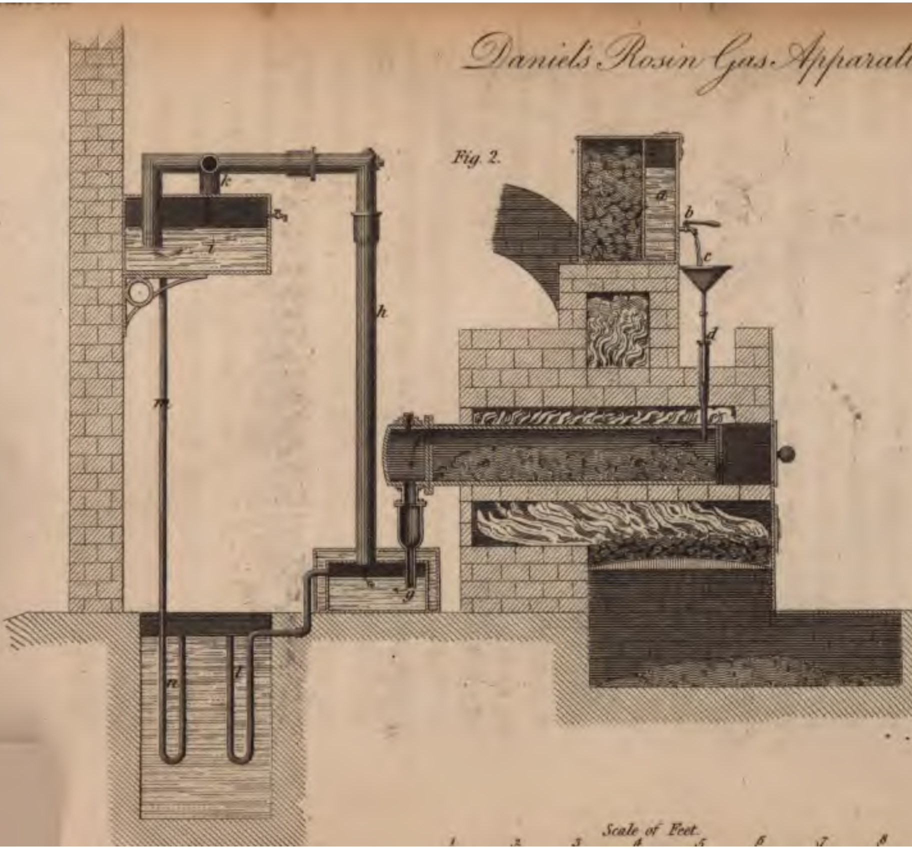
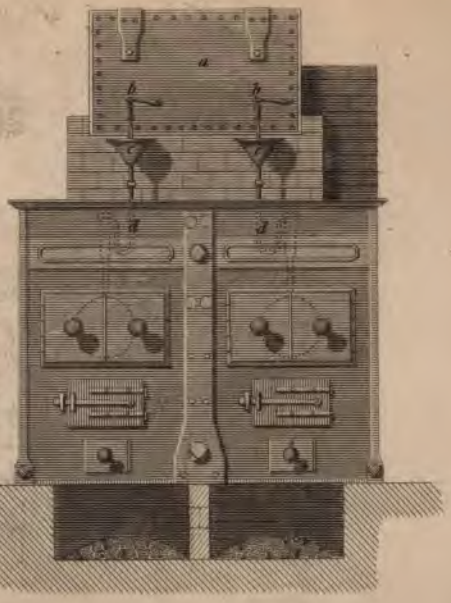


Fig. 1.



Scale of Feet.
1 2 3 4 5 6 7 8 9 10

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ASTOR, LENOX
TILDEN FOUNDATIONS

quantity of oil of turpentine, and furnished with two stop cocks *b*, *b*, for conveying the hot fluid to the funnels *c*, *c*. These communicate by means of the syphons *d*, *d*, with the heated retorts in which the gas is generated.

We may now turn to the sectional view, Fig. 2, and the process will be better understood. The retort *e*, *e*, is seen charged with coke, which is in the first instance raised to a bright red heat, by means of the furnace beneath. The common brown rosin of commerce, which is deposited in the tank *a*, is mixed with essential oil, in the proportions of one hundred pounds of the former, to ten gallons of the latter. A portion of the flame and heated air beneath, serves to preserve this in a fluid state, and a damper passing across the aperture in the chimney, exactly regulates the temperature of the fluid. A wire gauze screen at *f*, reaches to the bottom of the tank, and prevents the solid rosin, or any impurity with which it may be mixed, from choking the stop-cock.

The melted rosin having passed by the funnel *c*, and the syphon *d*, into the retort, falls on the coke, and in its passage through the ignited mass, becomes decomposed. On arriving at the other end of the retort, a large portion of the oil of turpentine in the form of condensible vapour, is separated by the refrigerator *g*; this is supplied with water from a cistern above, and the non-condensible vapour or gas passes up the tube *h*, and dips beneath the surface of the fluid in the vessel *i*. This completes the condensation, and the gas proceeds in a perfectly pure state by the pipe *k*, to the gasometer, or rather to the floating reservoir for use.

The essential oil, when it leaves the refrigerator, is conveyed by the syphon *b*, to a cistern beneath. The necessity for employing a syphon, will be apparent, when it is borne in mind that the tube prevents the escape of the gas, which would otherwise pass away from the box, with the essential oil. Another syphon and pipe *m*, serve to convey the condensed essential oil from the top cistern.

The burners in the London Institution consume about one thousand cubic feet of gas per day, and this is effected by the destructive distillation of one hundred pounds of rosin, at a cost of about six shillings. The essential oil is not taken into the account, as the same oil is used over and over again for any length of time.

The illuminating power of rosin gas, when compared to that from coal, is as two and a half of the former to one of the latter; and the economy of the process will be apparent, when we recollect that in addition to the vast advantage arising from its great illuminating power, the material itself for the quantity of gas produced, is cheaper than any other substance that can be obtained.

In the process of preparing the gas, the establishment usually employs about four bushels of coals, and two pecks of coke per day; and as the quantity of gas has been found to vary in amount, from materials nearly similar in quality, it may be advisable to furnish, in a tabular view, the result of one week's operation, commencing the first day of the present year.*

Jan.	Rosin.	Oil.	Gas in Feet.
1	100	10	1,000
2	100	10	1,050
3	100	8	1,000
5	75	8	,700
6	75	8	1,000
7	75	10	,900
	525	54	5,650

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* This is especially necessary when we recollect the absurd clamour that has been raised against the use of rosin gas generally; a clamour that has arisen partly from interested motives, and partly from the clumsy attempts to invade the rights of the Patentee, that have been made by unscientific persons.

We follow this account of the actual operation of Mr. Daniel's process at the London Institution, by a report of his inrolled specification, in which his general object and claim of invention, as respects the production of gas by these means, are set out.

Recent Patents.

To JOHN FREDERIC DANIEL, Esq. *of Gower Street, Bedford Square, in the County of Middlesex, for his having invented Improvements in the Manufacture of Gas.*—[Sealed Feb. 1, 1827.]

THE Patentee states, that his improvements apply to the process of obtaining gas for illumination from rosin, coal tar, turpentine, alcohol, or any other bituminous, or carbonaceous substance, coal excepted. For this purpose an apparatus is constructed, consisting of a vessel containing the materials from which the gas is to be produced; which materials being rendered fluid, are carried off by a cock into a funnel, and thence through a pipe into a retort.

The retort is charged with coke, or broken bricks, or small pieces of iron, or any other suitable substance, upon which the dissolved rosin, or coal tar, or other spirituous and carbonaceous matters is allowed to fall in drops, or in a small stream. The retort being heated by the fire in the furnace, by which it is surrounded, a destructive distillation of the rosin, tar, or other material, takes place, and the gas, given out by this distillation, passes by a suitable tube into a refrigerator, where part of the tarry, or other gross matter, thrown off with the gas, becomes condensed, and the more volatile part passes upwards, to be washed in a vessel of water, depositing again its grosser particles, and thence proceeds to the gas-holder, and to the burners.

The Patentee does not claim the apparatus exclusively as his invention, nor confine himself to the particular construction set out and exhibited in his specification, and accompanying drawing; the general arrangement of which is the same as in the apparatus erected at the London Institution, and shown in Plate XI, of which a particular description is given in the preceding article; but he particularly claims the mode of arranging the pipes and vessels for carrying off the gas, and depositing the residuum; and the partition or elevation, at the end of the retort, to prevent the coke, or other carbonaceous matters, from falling down into the tar vessel below.—[*Inrolled August*, 1827.]

To THOMAS MACHELL, *of Berners Street, Oxford Street, in the County of Middlesex, Surgeon, for his invention of certain improvements on Apparatus applicable to the burning of Oil, and other inflammable substances.* [Sealed 8th December, 1826.]

THE subject of this Patent is a lamp, in which the oil, or other inflammable liquid, is forced to the burner by pneumatic pressure.

Mr. Machell obtained a Patent in 1818, for an "apparatus for applying air for medical purposes, and applicable to the burning of oil in lamps, &c." in the specification of which he proposes to condense air by means of a small piston in a close vessel containing oil, and by the elastic force of such condensed air, to raise the oil up a shaft or column, to the burner at top of a pedestal lamp for the table. The construction of this lamp is described in the second vol. of our first series, p. 354, with a plate, under the title of the *Barrington Lamp.*

The lower part of this lamp was a close cylindrical, or square, metallic box, formed like the base of a column, intended to contain the oil, from which rose up an ornamental shaft, and above the capital was the burner. A small forcing pump was inserted into the base or box below, by which a quantity of air might be injected; and this air, as it became condensed, exerted such a mechanical force upon the surface of the oil as caused it to be raised up the centre of the shaft, to the burner.

The difficulty of rendering all the parts of this lamp perfectly sound and air tight, and the impracticability of governing the force of the condensed air, has rendered the Barrington lamp comparatively useless, although many years of assiduous application, and continual experiment, have been devoted by the Patentee to the perfecting of his invention.

The improvements, therefore, which constitute the subjects of the present patent, are contrivances adapted to the original principles of construction, and are designed for the purpose of obviating the inconvenience of leakage, by the introduction of compensating apparatus, which, in the event of extraordinary pressure, from the air being under too great a degree of compression, allow valves to open for the escape of a portion of the air, and also the rising main, by which the oil passes to the burner, to become contracted or partially closed.

In the base of the column, that is, the close vessel containing the oil, a tube is introduced, as in the former lamp, for the piston of the force-pump to work in. Through this tube, by the action of the piston, the air is injected into the close vessel; but in order to prevent too great a degree of condensation, there is a small valve in the piston, which, when pressed upon by a greater force of condensed air than is required for raising the oil to the burner, immediately opens outwards, and discharges a portion of the air ; so that it is impossible, however long the force-pump may be kept in action, to overcharge the vessel ; an occurrence which very frequently took place in the former lamp, by the carelessness or inexperience of servants, and the effect of which was either to open the joints of the lamp, and allow the oil to run out, or to force the oil through the aperture of the burner at top, sometimes in a jet or fountain, to the injury of the walls, ceiling, and furniture of the room.

As a further preventive against the oil flowing in too copious a stream through the rising main, or column, to the burner, it is proposed to insert into the column, or tube, through which the oil passes, a quantity of cotton yarn, or such other filamentous substance, as shall only allow the oil in rising to pass by percolation. One part of this tube is intercepted by a stop-cock, through the plug of which the yarn passes. If, therefore, the oil flows too freely, the stop-cock is to be partially turned, which compresses the yarn, by bringing its fibres into a close state, impedes the percolation, and prevents the oil from flowing copiously.

In order that the force of the condensed air in the oil vessel should act upon the stop-cock, and produce the compression of the yarn last described simultaneously with any increase of elastic pressure, from expansion of the air by heat or other cause, a float upon the surface of the oil is connected by a rod to the handle of the stop-cock, and which, ascending or descending as the pressure is greater or less upon the oil, partially closes or opens the stop-cock, and regulates the supply of oil to the burner accordingly.

This float is of cork, or other light substance, and fits tightly into a tube partly immersed in the oil in the close vessel below. It is pressed downwards by a spiral spring, tempered to such strength as will be an exact balance to the required elastic force of the compressed air. A rod passes from the float upwards, and is attached to the lever of the stop-cock; hence, whenever the pressure of the air upon the surface of the oil is too great, the oil is forced up this tube, which raises the float, and the rod, partially closing the cock, compresses the yarn, and impedes the flow of the oil.

The Patentee adapts the principle of this pneumatic apparatus, with its improvements, to different forms and kinds of lamps. There is, however, a want of simplicity in the general construction: indeed, if we were to judge from the very large drawing which accompanies the inrolled specification, and the multitude of figures represented, with a description filling eight skins of parchment, we might say it is extremely complicated.

We have protracted the publication of the report of this invention, under an impression that a more perfect lamp would be produced than any that has been heretofore made upon this principle. In this, however, we are disappointed. Should the Patentee succeed in producing a perfect lamp, worthy of public patronage, we shall take an early opportunity of noticing it, and of explaining its complete construction, with such graphic illustration as may be necessary; but at present we do not consider that the subject merits that attention.—[*Inrolled June,* 1828.]

To CALEB HITCH, *the Younger, of Ware, in the County of Herts, Brick Maker, for his having invented, or found out, an improved Wall for Building Purposes.* [Sealed Feb. 21, 1828.]

THE Patentee says, that his improvement " consists in a wall built of bricks, with hollows or cavities in them, so formed, that the whole may be cemented together in one solid mass, at much less expense than by the ordinary method, and in such manner that much less mortar will be required, and fewer joints created; whereby a bold and uniform bond is produced, and the expense of repairing the wall much reduced."

The specification then goes on to describe the sort of mould required for forming the brick, of which the said wall is to be built; but on exhibiting the figures of the bricks proposed to be used, the construction of the moulds for forming them will be immediately obvious.

The shapes of the bricks are to be slightly varied, according to the thickness of the wall intended to be erected, that is, whether a nine-inch, or a twelve inch wall, or one of greater substance. Plate XII. Fig. 1, shews the forms of several bricks connected together for the erection of a nine-inch wall, which consists of the bricks *a, a, a,* called bat headers, placed longitudinally, and the bricks *b, b,* called stretchers, placed transversely, with rebates and dovetail ends, locking into corresponding rebates and dovetails in the longitudinal bricks.

In laying these bricks, mortar or cement is used for fixing them at the joints, and for the bedding, &c. After placing a second course upon a bed of mortar, the joints of the bricks blocking or coming upon the solid parts of the lower bricks, and the dowel holes corresponding, a quantity of cement is poured into the dowel holes, and into the vacant spaces between the bricks, which, when it has become hard, firmly unites the upper and lower course together.

The cement proposed to be used for this purpose, is to be made of " hot stone lime, burnt brick dust, sharp sand, shingle and flint, or clean gravel mixed together; with as small a quantity of water as possible, just sufficient to give a consistency to the whole.

Every two layers of bricks are to be cemented in this way, and the core formed by the composition will confine the whole of the work together, and cause the wall to become one solid mass.

In erecting a wall thicker than nine inches, or any mass of brickwork, as for piers, &c. another disposition and form of bricks is proposed, shewn at Fig. 2. The erection is to be begun at the angle, by placing what is called the angle header; then lay the closer, and then the stretcher, so as to rebate in with the closer, and then the bat header and stretcher, alternately. In laying the second course of bricks of the same kind upon these, the joints are to be blocked, and the dowel holes made to correspond, as before described, into which, and into the insterstices between the bricks, the cement is to be poured: and so on, connecting the whole of the work into one solid mass. In making the reveals for windows and doors, bricks, with indentions suited to the purpose, are to be employed.

When there is likely to be a particular stress upon the back of the wall, as in embankments, &c. iron rods may be inserted through the dowel holes, from top to bottom, so as to form an additional bulwark against the back pressure. In this case, the iron rods are first fixed in the plank or apron below, and the bricks are then let down from the top, sliding upon the iron rod.

The manner of making these bricks is nearly the same as that commonly practised by the makers of ordinary bricks, (viz.) a mould is provided of the proper shape, and made to open, for the purpose of delivering the brick, after it is moulded. A brick table of the usual kind is provided, and the usual admixture of clay and other ingredients having been well prepared, is pressed into the mould in the usual way, and a stock with dowells is employed for forming the dowell holes, at equal distances apart. The brick is then dried and baked in the usual way, and worked up into walls in the manner described.

The Patentee says, in conclusion :—" Now whereas, I claim as my invention, a wall, built of such bricks as are hereinbefore described, and in manner aforesaid, for building purposes; and such invention being, to the best of my knowledge and belief, entirely new, &c."—[*Inrolled April*, 1828.]

To JAMES NEVILLE, *of New Walk, Shad Thames, in the County of Surrey, Engineer, for his new invented improved Carriage, to be worked or propelled by means of Steam.*—[Sealed Jan. 15, 1827.]

THE subjects of this Patent are, first, a peculiar mode of constructing the running wheels of steam carriages, or rather adapting certain appendages to the peripheries of the wheels of steam carriages, by which they shall be enabled to take firm hold of the ground, and not be subject to slide round, without moving the carriage forward; secondly, in adapting different kinds of gear, by which the power of the engine, as applied to propel the carriage, may be occasionally increased, as in ascending hills.

The running wheels are proposed to be made of iron; and a particular feature in their construction is, that the spokes are, each of them formed by double rods, their ends inserted into the iron naves being placed nearly together, and the rods extending outwards, at an angle from each other, so as to stand at as great a distance apart, where they are inserted into the iron fellies, as the breadth of the wheel will allow. This is designed to give strength to the wheel.

The periphery, or tire of the wheel, is studded with many small pins, extending out about half an inch, for the purpose of taking hold of the ground, and preventing the wheel, when impelled by the engine, from slipping round upon the surface of the road.

Another contrivance for enabling the wheel to take fast hold of the ground is, by attaching to the periphery or tire, a number of pieces of thin plate steel, which pieces are to be fastened at one end to the wheel, and stand round it in the positions of so many tangents. As the wheel revolves in a forward direction, these pieces being pliant, will roll up to the circular figure of the wheel; that is, accommodate themselves to the circular form of the tire of the wheel, and successively lay close to it, as they come into contact with the ground, and as soon as they have respectively passed, or risen from the ground, will again assume their tangent positions. If, as the wheel is impelled, it has any tendency to slip round upon the surface of the road, instead of rolling forward, these tangent pieces will, as they come successively to the ground, increase the friction, by extending the surface in contact.

The impelling power is proposed to be obtained by a steam engine, connected to the carriage. Any construction of steam engine may be adopted, but one acting upon the high pressure principle is to be preferred.

The working cylinders are to be suspended from the carriage by pivots, so as to vibrate and accommodate themselves to the positions of the piston rods, which, being attached immediately to the cranks of the main axle, will necessarily vibrate in an angle equal to the throw of the crank. By this means, a vibrating beam is dispensed with.

The Patentee proposes to employ a boiler with pipes, constructed upon the principles set forth in the specification of a Patent granted to him in March, 1826, (see the First Series of our Journal, Vol. XIV. page 294,) and also to employ bellows, or a blowing machine, to promote the combustion of the fuel, and thereby increase the quantity of steam generated. This part of the apparatus, the Patentee recommends to be constructed upon the plan set forth in the specification of another Patent, granted to him in January, 1823, (see the First Series of our Journal, Vol. VIII. page 236.)

The other feature of novelty proposed under this Patent is, a contrivance for exerting variable powers, as occasion shall require, to propel the carriage up hill.

The impelling power is to be applied to the hinder pair of running wheels, which slide loosely upon the ends of the main rotatory shaft, and they are to be connected to the shaft by clutch boxes, which are thrown in and out of gear by a lever, by the hands, either of the director, in front of the carriage, or by the stoker behind, as occasion shall require.

The clutch boxes communicate the ordinary power of the engine upon level ground; but in going up hill, they are thrown out of gear, and the force for impelling is applied to the running wheels through pinions and toothed wheels, which exert an increased power, at the expense of speed. [*Inrolled July,* 1827.]

To William Day, *of the Strand, in the County of Middlesex, Trunk and Camp Equipage Maker, for his invention of certain improvements on Bedsteads, which improvements are also applicable to other purposes.* [Sealed 31st August, 1826.]

This invention consists in causing the various parts of bedsteads to expand or contract, by forming the side-rails, posts, and top-rails, or tester, of rods or tubes, sliding one within the other. The Patentee says, "I claim as my invention any and every way in which the same may be effected;" but merely for the purpose, he says, of illustrating some method of enabling the rods to expand, he exhibits in his drawing a mode; which is, by causing one part of the rail or rod, to screw within a tube.

This or any other contrivance for expanding or contracting rods or tubes, like the draws of a telescope, may be applied to the rails of bedsteads, which, having suitable stops, may be drawn out and fixed to any desired extent, making the dimensions of the bedstead suitable for one or two persons, the sacking, of course, being let out accordingly.

It appears that the Patentee designs this contrivance principally for camp bedsteads; he, however, also applies the same expanding rods to the backs of chairs, passing them into the hinder legs, and by these means renders both bedsteads and chairs portable, for the purpose of travelling, as parts of camp equipage, or any other purpose to which the same may be found applicable.—[*Inrolled Feb.* 1827.]

To TIMOTHY BURSTALL, *of Leith, Scotland, and* JOHN HILL, *of Bath, Engineers, for their invention of certain improvements in the Machinery for propelling Locomotive Carriages.* [Sealed 22d Aug. 1826.]

THE subjects claimed under this Patent are intended to be associated with other inventions described under a previous Patent, granted to the same parties in February, 1824, for the construction of a locomotive engine or steam carriage. (See Vol. XII. of our first series, p. 294, and subsequent notices of the progress of the invention, in our XIIIth and XIVth Vols.)

We have delayed our report of the specification of the present Patent, in the hope that we should shortly be able to lay before our readers a description of a complete carriage in working order. That hope has not yet been realized, and we give the following account of the improvements claimed under this Patent, with a pledge, that when this steam carriage is in a condition for public service, we shall resume the subject, and give a perfect description of its construction.

The carriage supporting the steam apparatus and other machinery, by which it was to be propelled, and also the body of the vehicle, originally ran upon four wheels; one feature of the present Patent is, the adaptation of an additional pair of wheels to support the boiler on a distinct carriage, attached to the hinder part of that on which the body of the vehicle is conveyed. The object of this is stated to be, to keep the boiler and furnace further from the passengers. The mode of attaching the hinder carriage, allows its wheels, when the carriage is turning or running in a curved track, to accommodate themselves to winding course; and the pipes, which convey the water and the steam, are furnished with universal joints, at the parts where they are connected, instead of the elastic connecting pipe, described in the former Patent. This forms the second feature of the present invention.

The adaptation of such gear as shall allow an increased power to be occasionally applied, as in ascending hills, forms a third claim; and steering the front wheels, by means of a spur wheel, and an endless chain, instead of a wheel and pinion, as before, constitutes the fourth claim.

A representation of the carriage, with these improvements appended, is exhibited in Vol. XIV. p. 375, of our Journal; but as we have said above, a complete description of its construction will be given as soon as we have notice of the carriage running publicly.—[*Inrolled Feb.* 1827.]

To FREDERIC ANDREWS, *of Stamford Rivers, in the County of Essex, Gentleman, for his invention of certain improvements in the construction of Carriages, and in the Engines or Machinery to propel the same, to be operated upon by Steam, or other suitable power*; *which Engines or Machinery are also applicable to other purposes.*—[Sealed December 20, 1826.]

THESE improvements apply to locomotive steam carriages, and consist of the following particulars:—First, in placing the boiler or steam generator in the lowest part of the carriage, between the running wheels, and passing the axle of the wheels (which is the crank shaft of the engine) through the boiler; secondly, mounting the working cylinders of the engine upon pivots, and placing them horizontally under the carriage, the ends of the piston rods being immediately connected to the cranks on the axle of the running wheels; thirdly, constructing the fire place of the boiler with tubes on the sides, communicating with the interior of the boiler, and mounting it and the boiler and engine upon a frame with springs, for the purpose of preventing any inconvenience, which might otherwise arise to the engine from jolting, as the carriage travels upon ordinary roads; and lastly, employing a single wheel for steering, and connecting it, by means of a frame, to the front axle tree of the carriage, and loading it with a box above, for the conveyance of luggage, without adding to the weight of the carriage.

Plate XII. Fig. 3, exhibits a section of the boiler, with the axle of the running wheels passing through, and below is the fire place. The boiler *a*, *a*, is cylindrical, and has a flue *b*, extending longitudinally through it from end to end. This flue of course communicates with the fire at one extremity, and with the chimney at the other; *c*, is the fire place, attached to the under side of the boiler, and these are together suspended from the frame of the carriage *d*, *d*, by rods or braces; the frame resting upon springs, as carriages commonly do.

A tube *e*, *e*, is made through the boiler, for the purpose of receiving the axle *f*, *f*, of the running wheels *g*, *g*. This tube is narrow, having no occasion to be much wider than the diameter of the axle, but it is made deep, in order to allow the crank to be passed through, and to afford room for the action of the carriage upon the springs.

The working cylinders are placed horizontally as above said, and the ends of their piston rods are connected to the cranks of the shaft or axle *f*. The centres of the cylinders are on a line with the centres of each crank, and they vibrate upon pivots, in order to accommodate the direction of the piston rods to the throw of the crank. Thus, by the action of the cylinders, the axle *f*, is made to revolve, and the wheels *g*, *g*, being fixed to the ends of the axle, are necessarily turned also, which moves the carriage forward.

The sides of the fire place are formed by horizontal tubes *h*, *h*, filled with water; the ends of these tubes communicating with perpendicular tubes, which lead into the boiler. Thus the heat, which would be thrown off by radiation, is taken up by the water in the tubes, and steam is thereby generated.

The steering wheel is a small wheel running in front of the carriage, and is connected thereto by parallel rails, in which its axle turns. These rails are affixed to the fore axle-tree, which locks in the usual way; and the steering wheel being turned by a lever, causes the fore axle-tree to move round, and to direct the wheels in the course in which the carriage is intended to run. There is to be a box above the steering wheel, to contain luggage or any other weighty article, to keep it firmly upon the ground.

The particular claims of the Patentee are those above enumerated, viz. passing the axle through the boiler—placing the engines as described—forming the sides of the fire place with tubes, and connecting the steering wheel with a weighted box to the front axle tree of the carriage.

As to the form of the body of the vehicle which may be thus propelled, the Patentee does not profess to have invented any improvement. It may be in construction and shape, both within and without, according to any plan that may be found most convenient or desirable.—[*Inrolled June*, 1827,]

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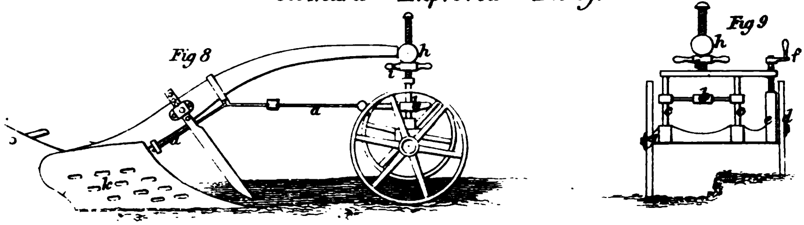
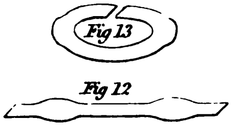
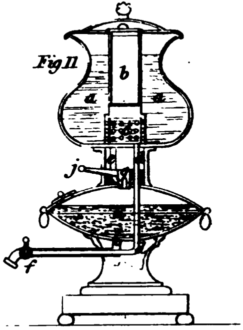
Stotharts Improved Plough



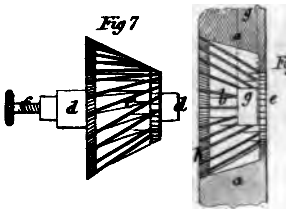
Hawks Improved Cable



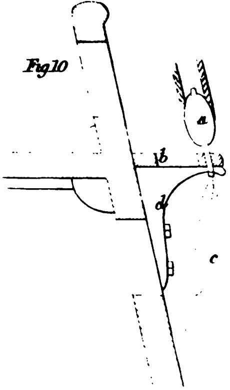
Sharps Improved Urn



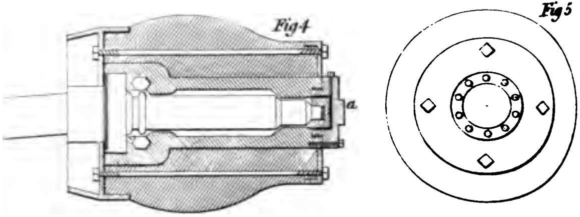
Benecks Oil Mill



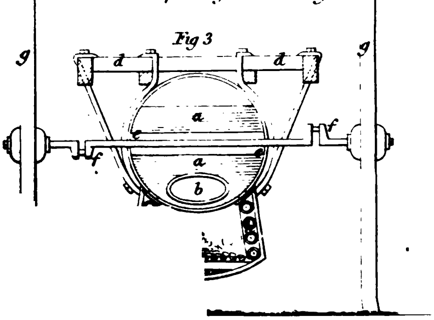
Clarks Impd Dead Eyes



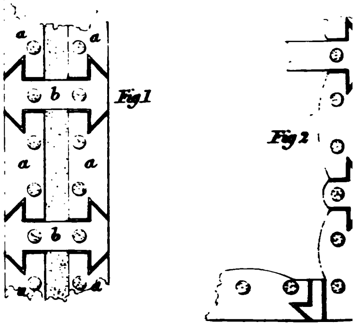
Masons Improved Mail Axle



Andrews's Propelling Machinery



Hitch's Improved Bricks



one of the holes in the end of the box, to fix it; and the channel for conducting the oil.—[*Inrolled March,* 1827.]

To HENRY ASPREY STOTHART, *of the City of Bath, Founder, for his invention of certain improvements or additions to Ploughs.*—[Sealed 4th April, 1827.]

THE several features of novelty proposed under this Patent are, first, a mode of varying the points of draught of a plough, to suit either a tall or a short horse; which is, by employing a chain with swivels, and causing the staple, or piece to which the traces of the horse are made fast, to slide upon perpendicular guide-rods, mounted on the carriage to which the guide-wheels are attached; secondly, in a method of raising or lowering the lesser or land wheel of the carriage, in order to accommodate it to the depth of the larger wheel, which runs in the furrow; thirdly, attaching the ends of the beam to the carriage, by means of a ball and socket, for the purpose of enabling the plough to turn at the ends of the furrows, and which is capable of being raised or lowered upon a screw, in order to regulate the depth of the ploughing; and lastly, perforating the breast or mould-board with holes, in order to admit air, and prevent that friction which is caused by the wet earth sticking to it, as the plough turned over the earth from the furrow.

All the parts of the plough are to be made of iron, except the beam and handles. Plate XII, fig. 8, is a side view of a plough, with the improvements adapted thereto; *a, a,* is the chain by which the plough is to be drawn, having links and joints in several parts, to accommodate it to the draught when that shall deviate from a straight direction; *b,* is the staple or piece to which the traces of the horse are to be attached; this slides up and down upon two vertical rods, *c*, *c*, (best seen in the front view of the carriage, fig. 9,) in order to accommodate the draft to the height of the horse, and thereby enable him to exert his power with the best effect against the collar.

The same, Fig. 9, also shows the manner of raising or lowering the land wheel, *d*. The pivot or axle on which this wheel turns, slides in a groove in the upright piece *e*, and the winch *f*, at top, being turned, raises or lowers the axle of this wheel, for the purpose of adjusting it to the height of the ground, or rather to the depth of the furrow in which the other wheel *g*, is running.

The end of the beam of the plough is inserted into a ball and socket *h*, which, being a universal joint, allows the carriage to turn at any angle, in making the bouts at the ends of the furrows; and this ball and socket may be raised or lowerrd upon the perpendicular pin which passes through it, by turning the screw-box *i*, by its handles. In this way the end of the beam is raised or lowered, according to the depth to which the ploughshare is required to enter the ground.

The last feature of novelty proposed is, the perforated breast or mould-board *k*, which may be pierced, in the manner shown, with holes of any form or dimensions, the object of which is, to allow the air to pass through the mould-board, and thereby prevent it from sticking to the wet earth with such a degree of tenacity as frequently, in the ordinary ploughs, greatly impedes the work, by rendering it more laborious by the adhesion.

The Patentee does not confine himself to the precise mode set out in the figures, of effecting the above object, but claims any other arrangement by which a similar effect may be produced upon the same principle.—[*Inrolled October*, 1827.]

To William Benecke, *of Deptford, in the County of Kent, Gentleman, in consequence of a communication made to him by M. William Pescatore, a foreigner residing at Luxemburgh, in the Kingdom of the Netherlands, (on whose behalf this Patent is taken) for an invention of a machine for grinding or crushing seeds, and other oleaginous substances, for the purpose of extracting oil therefrom.*—[Sealed February 20, 1827.]

The principle feature of this invention is, the peculiar form and position of the internal parts of the oil mill, which the Patentee considers to be perfectly new, as applied to that purpose. It consists of a conical recess, having teeth or grooves cut in it, and of a frustrum of a cone, with corresponding teeth upon it, working in the recess, in a perpendicular position.

This contrivance is represented in Plate XII. at Figs. 6 and 7; *a*, *a*, Fig. 6, is the fixed part of the mill, shown in section; *b*, the conical recess, with teeth or grooves. Fig. 7, represents the frustrum of a cone *c*, with teeth or grooves formed upon it, which is intended to work in the recess.

The frustrum is mounted upon an axle *d*, which passes through a central aperture at *e*, in the fixed plate, and the ends of the shaft are supported in plumber boxes, set upon rails in a wooden frame, which may be easily conceived, although not shewn in the figure.

It is necessary, that the two conical parts should be set very accurately that is perfectly concentric, and a screw is inserted at *f*, for the purpose of adjustment, by which the two surfaces of the grinding parts may be brought nearer together, or set farther apart.

When these parts are properly mounted in their frame, the seed, intended to be crushed, is introduced by a hopper, and conducted down the channel *g*, *g*, into the mill. Rotatory motion being now given to the frustrum *c*, the seeds become crushed as they descend, and the oil expressed runs out at the aperture *e*, and is received in a suitable vessel below: while the meal and husk of the seed falls out of the mill on the reverse side at *h*, and by the operation of grinding has become so warm, that it requires no more heat, previously to being pressed into oil cakes.—[*Inrolled August*, 1827.]

To HUGH EVANS, *of Great Surrey Street, in the County of Surrey, Lieutenant in Our Royal Marine Corps, and* WILLIAM ROBERT HALL KING, *of Snow Hill, in the City of London, Tin-plate Worker, for their Invention of a new Table Apparatus, to promote the ease, comfort, and economy of Persons at Sea, or on Nautical Excursions.*—[Sealed 12 June, 1827.]

THE subject of this invention is an apparatus designed to be attached to a table on ship-board, for holding dishes, plates, bottles, glasses, and other articles, in order to prevent their falling off, as the ship rolls and pitches in rough weather.

The apparatus consists of a ring of metal, sufficiently large to receive a dish or bowl, from which a piece of metal extends, having a screw and clamp, for the purpose of making the ring fast to the table. To this ring is attached, by hinge joints, various other rings, and spring holders, which, when opened outwards, serve to receive plates, bottles, drinking-glasses, cups, knives, forks, spoons, &c.

The Patentees do not limit themselves to any particular number of holders which shall be attached to the central ring, nor to any particular shapes, as their invention consists in the contrivance of an apparatus for holding these sort of articles on a ship's table in stormy weather, by rings and spring catches, and which apparatus, when not required to be used, may be unscrewed from the table, and all the holders folded back upon their hinges, and enclosed within the central ring, and the apparatus stowed away in a small compass.—[*Inrolled Dec.* 1827.]

To JOHN WERE CLARK, *of Tiverton, in the County of Devon, for his Invention of an improved mode of attaching, fixing, or securing the dead eyes to the channels and sides of ships or vessels.* [Sealed 8th June, 1827.]

THE Patentee states, that great inconvenience arises from the ordinary mode of attaching to ships of war the dead eyes, by which the masts and rigging are braced.

Plate XII, fig. 10, shows a section of part of the side of a ship, with the dead eyes attached, upon the improved plan. The same figure also illustrates by dots the objectionable manner of fixing them, as heretofore practised. *a*, is the pulley block, constituting one of the dead eyes; *b*, is the channel by which it is kept out from the side of the ship; and *c*, is the chain, shown by dots, fastened to the side of the vessel below, by which the dead eyes are usually held.

When a vessel is in action, these chains frequently prevent the guns at the lower port-holes from being pointed obliquely, and therefore it would be very desirable to remove them, which is done in the plan proposed, and another mode of fastening adopted. A still more important objection, however, exists to the mode of fastening by the chains, shown by dots, which is, that in the event of the mast being carried overboard by a shot, or in a storm, it has been found extremely difficult to disengage the dead eyes and the chains from the vessel, and the mast and rigging have been frequently held in a dangerous situation, hanging over the side of the vessel, without the power of releasing them.

Instead of the bracing chain *c*, the Patentee proposes to form the channels *b*, by a series of strong iron brackets, *d*, each having a hook at the end, over which the staples of the dead eyes are passed, and are thereby held with sufficient tension. All obstructions to the guns of the lower port-holes are thus removed, and in case the mast should be carried overboard in a storm, or in action, the staples of the dead eyes immediately fall from the hooks under the channels, and the mast and rigging becomes released.

The channels may be covered with grating, or planked, if necessary, and rails may be attached to them to give strength, should that be required.—[*Inrolled Dec.* 1827.]

To GEORGE ANTHONY SHARPE, ESQ. *of Putney, in the County of Surrey, for his invention of an improved Table Urn.*—[Sealed July 18, 1827.]

THE intention of this improved table urn, is to supply boiling water from one part of it, and at the same time, furnish tea or coffee from another part. A section of the apparatus is shewn in Plate XII. Fig. 11; *a*, is the urn, containing the water, which, while standing on the table, is kept boiling, by means of a heater *b*, in the ordinary way. Under the heater, there is a strainer *c*, through which the water passes to two pipes. The pipe *d*, conducts the boiling water down to the cock *f*, where it may be drawn off for the ordinary purposes of the table; the pipe *e*, conducts the water through a stop cock *g*, into the vessel *h*.

The vessel *h*, is designed to contain tea or coffee, which s introduced into it through an aperture, to be covered by a lid, in a similar way to other tea or coffee pots, when in use. The boiling water for making tea or coffee is, as occasion may require, taken from the urn *a*, above, through the pipe *e*, and stop-cock *g*, by moving the handle *j*; and when the tea or coffee is to be drawn off into cups for use, it passes from the vessel *h*, through a grating at bottom, and thence by the pipe *i*, to the cock *f*.

In order to hide the horizontal slit, in which the handle *j*, is moved, a collar of metal, rendered ornamental on the outside, may be made to embrace the cylindrical part of the urn, where the stop-cock is placed, and to slide round, as the handle is turned.

The external form of the urn may be varied at pleasure, according to taste or fashion, without deviating from the improved principle of construction, which consists in the combination of the water vessel, with that in which the tea or coffee is made; and the mode of communication through the stop-cock; and also in the contrivance of the two pipes in the barrel of the discharge cock: the one delivering water, the other tea or coffee.—[*Inrolled January*, 1828.]

To JOHN HAWKS, *of Weymouth Street, Portland Place, in the County of Middlesex, Iron Manufacturer, for his having found out or invented an improvement in the construction of Ships' Cable and Hawser Chains.*—[Sealed 10th July, 1828.]

EXPERIENCE has taught, that the ends of the links of chains wear out by the friction much sooner than the sides of the links; the Patentee has, therefore, proposed to construct chains for nautical use, with links which are considerably stouter at the ends, than in the middle.

In order to accomplish this, he forms the bars or rods of iron, from which the links are to be cut, with swells or protuberances, in the manner shewn in Plate XII. Fig. 12. These are then cut into lengths, and being bent up into the eliptical form, shewn at Fig. 13, the ends are welded together, and the link finished.

The rods may be thus formed by rolling, swagging, or any other means; and when the link is welded together, it may be strengthened, by having a brace or stretcher placed across the middle, as chain cables commonly have. [*Inrolled September*, 1828.]

Novel Inventions.

A NEW constructed apparatus for raising water, the invention of a gentleman named Bernhard, and for which he has lately obtained a Patent, is much spoken of as developing a new feature in the sciences of pneumatics and hydraulics. We have not yet been able to see the apparatus or the models, but are informed by a scientific gentleman, of considerable repute, that there is much promise in the plan, as far as he has been able to investigate it. We quote the words of a letter, in reply to our inquiries on this subject:—

"The invention of Mr. Bernhard seems to open a new field for experiment, and if his positions be correct, is likely to be of the highest importance to hydraulics generally, and in a conspicuous degree applicable to the purpose of raising water, either for the supply of water to houses in populous towns, for drawing mines, bogs, &c. while its application as a general power, must add greatly to its value.

"The distinguishing features of this invention are, its great simplicity of construction, its safety, and its durability; all of which are of first-rate moment in machinery of every kind. Another peculiar and important feature in the invention, as regards its application to supplying water to houses is, that the water becomes in a degree purified in its passage, by the nature of the apparatus itself.

"It still remains to be proved whether by this discovery of generating power, by means of the circulation of water or quicksilver, a degree of power will be produced by a consumption of fuel equal to what would be required to produce the same quantity of power in a common steam engine. If the inventor has satisfactorily proved this fact by experiment, then he may with justice claim to himself the palm for the superiority of his discovery."

The practicability of raising fluids to any height, by the above method, which appears to admit theoretically of no doubt, has also been demonstrated, as we understand, by several experiments, which the inventor has made with a model for raising quicksilver; when the fluid was raised 70 inches high. A water work for raising water, on the same principle, to the height of 70 feet, is now constructing in the neighbourhood of the metropolis, and, as we understand, is on the eve of being finished.

We hope, therefore, in our next to be enabled to lay before our readers some facts relating to this discovery, which appears to be as interesting to science as it is important to the practical purposes of life; and we shall also endeavour to obtain from the inventor himself some details of the first cost, general economy, and available power of his machinery.

Wind Harmonica.

A curious musical instrument, under this title, is now generally sold about the streets of the metropolis. It is very simple in its construction, and consists of a series of metallic bars, put in motion by air. The production of musical sounds by the vibration of springs is not a novel invention: the idea is to be found in that very curious old work, the Musurgia of Athanasius Kircher, published at Rome in 1650; but it is only at a very late period that the idea has been reduced to practice. The first instance of it occurred at the beginning of this century, when, by the skilful application of metallic springs for the reed-pipes, Mr. Flight effected a material change in the construction of organs; and through these means have the instruments constructed by Messrs. Flight and Robson attained their singular perfection. This improvement was generally adopted. The principle was then applied on a much smaller scale; and the diminitive instrument, called *the Mouth Harmonica*, was invented in Germany. Pieces of metal, varying in size from a shilling to a crown-piece, are pierced with longitudinal apertures, varying in size and number, suited to the chords and loudness of the tone to be produced by the vibration of the springs, with which they are partially closed. To some a mouth-piece is adapted, others are simply applied to the lips. Some, designed as substitutes for a tunning fork, produce only a single note; others only a single chord; in many, two or more chords are combined, and the effect is then enchanting, resembling what we should conceive of a Lilliputian band of martial music, or a fine-toned organ at a distance. For the production of melody, two or more of these small instruments are required, which are harmonized accordingly. A keyed instrument, designed to accompany the piano-forte, has been exhibited in this country; the effect was pleasing: for the purpose it was designed it was well adapted; but when played by itself, the ear was altogether disappointed. An organ constructed solely with springs would not be tolerable,—a judicious combination of them with reed and other pipes, is necessary to impart the full richness of tone, which occasions the superiority of that grandest of instruments.

Paper Linen.

A new invention, called *papier-linge,* has lately attracted much notice in Paris. It consists of a paper made to resemble damask and other linen so closely, that it is impossible, without a close examination, to detect the difference; and even to the touch, the articles made from the papier-linge are very much like linen. They are used for every purpose to which linen is applicable, with the exception, of course, of those in which strength and durability are required. A French paper, indeed, says that they are almost as solid as those manufactured from linen; but this cannot be possible. The price is very low; a napkin costs only five or six centimes, about a halfpenny, and when they are dirty they are taken back at half price. A good-sized table-cloth sells for only a franc; and for the same price we may have a rouleau of paper, with one or two colours, for papering rooms, or for bed-certains.

Colouring Liquors.

Indigo, dissolved in sulphuric acid, affords a permanent blue colour. Take indigo in powder, and grind it up with a small quantity of water, in a glass mortar; on this pour, from time to time, a little concentrated sulphuric acid, at 66°, or until the indigo appears to be entirely dissolved. Then add to the solution carbonate of lir powder, which neutralizes the sulphuric acid, forming with it sulphate of lime, which becomes charged with the blue colouring matter of indigo. After filtering it, and mixing it with the yellow of carthamus, we obtain all the varieties of green which can possibly be desired. This preparation in small quantities is not injurious to the health, nor does it change the flavour of the liquors which are coloured by it. The confectioners use it also to tinge the green sweatmeats with.

Polytechnic and Scientific Intelligence.

SOCIETY OF ARTS.

THERE have been but few mechanical subjects possessing pos-any particular merit submitted to the approval of the Society of Arts, since the commencement of its present session: but a novel feature has sprung up in the society, which appears to have excited considerable attention. Their learned and scientific secretary, Mr. Arthur Aikin, has commenced a course of lectures on different branches of manufacture, which are delivered before the members and their friends every alternate Tuesday evening.

A variety of works of art, such as the members and friends of the society may occasionally think proper to lend for the occasion, are displayed in the rooms; and, after the lecture is concluded, the company occupy themselves in conversation, and are refreshed with tea and coffee.

The subjects of the two first lectures, which took place on the 27th of January and the 10th of February, were the manufacture of ancient and modern pottery and porcelain.

The lecturer commenced, by describing the constituent parts of different kinds of clay, the chemical and plastic properties, and the reasons for their becoming hard, when submitted to the

Haden's Imp.d Machinery for Dreſsing Cloth.

Fig. 6.

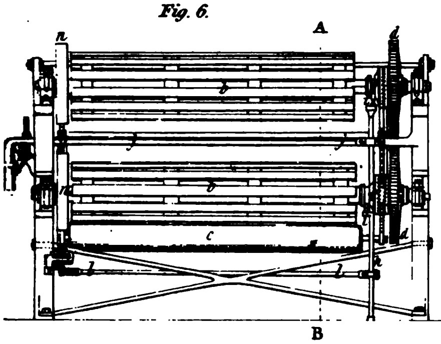


Fig. 7.

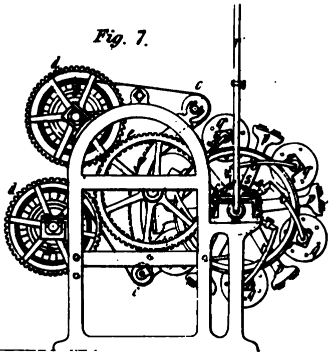


Fig. 10.

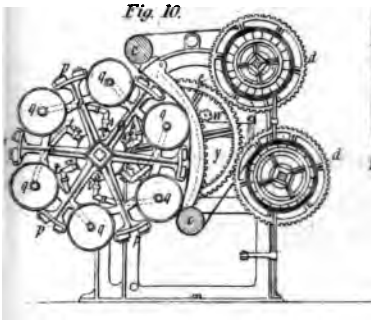


Fig. 9.

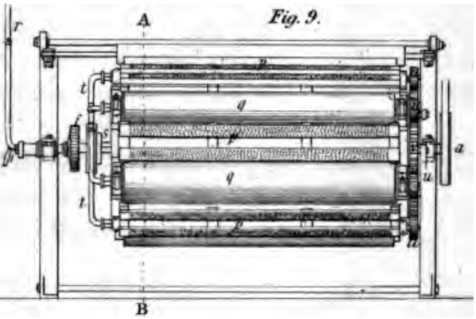
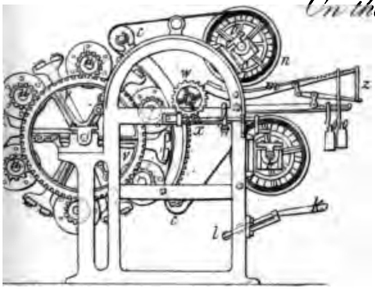


Fig. 8.



On the parallel motion of a Steam Engin

Fig. 5.

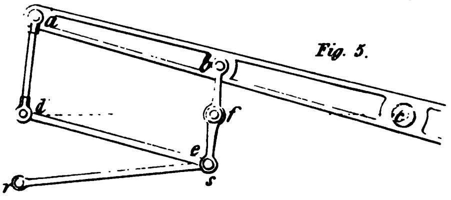


Fig. 2.

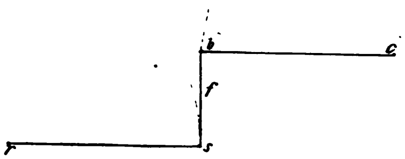


Fig. 3.

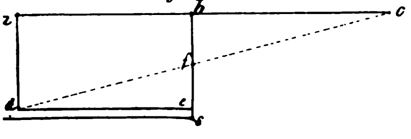


Fig. 4.

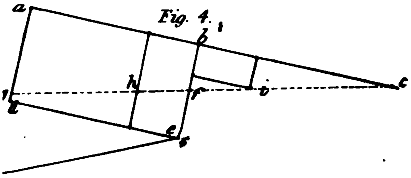
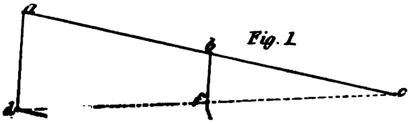


Fig. 1.



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action of fire. Clay is composed, for the most part, of aluminous and silicious earths, which, when mixed with other matters, and acted upon by fire, produce different kinds of earthenware and pottery; the colour depending upon the qualities of the earth, and its hardness upon the intensity of the heat, which brings it into a state, more or less, approaching to glass.

The most ordinary kind of pottery is common bricks and tiles, and the use of these existed as early as the building of Babel. Specimens of some of the bricks taken from the ruins of ancient Babylon, where produced from the Museum of the East India Company. Bricks were known in ancient Egypt; the Pyramids are built of them. In that country, the clay was mixed with chopped straw, and they were sun dried, instead of being burnt. The Grecians erected buildings of bricks; the Romans did the same, mixed with stones.

The ancient and modern modes of making bricks were described—a practice of no great antiquity among the English. By the common process of hand labour, one man has been known to mould 11,000 in a day: the average quantity, however, is not more than 5,000; but this, according to the Lecturer's opinion, shews that manufacturing bricks by machinery could never be attended with profit. It is a matter, perhaps, not generally known, that vast quantities of brick are exported from England to different parts of the world. The modern City of Moscow has, in a great measure, been built with English bricks.

The lathe or potter's wheel for producing round earthen vessels, is an invention of great antiquity; Isaiah and Homer, both mention it.

The Deptford clay is used for common red pottery ware, and in order to produce glaze, it is washed before burning, with a cream made from lead ore, and is cooled gradually to prevent cracking. This glaze is dissolved by sharp vegetable acid, and extracts of fruits have, by remaining in glazed vessels, become poisonous.

LONDON INSTITUTION.

The evening parties for the exhibition of new and curious articles in arts and manufactures, commence on the 8th of March.

Fishes.

It is the opinion of two celebrated French ichthyologists, M. M. Bloch and Lacepede, that the mackarel and some of the gregarious fishes do not, as is commonly believed, migrate from their respective seas, but merely quit the vicinity of the shores at the approach of winter, and lie among the mud at the bottom of deep water, till revived by the warmth of the ensuing spring.

Vital Parts of a Tree.

The innermost layers of the bark, and the outermost layers of the wood, are the most vital parts of the stem of a tree, and those on the healthy condition of which the whole plant most immediately depends. Hence, many trees continue to exist for years, when the central part is completely decayed, or even not present; so that the trunk is a hollow cylinder, sometimes of most spacious dimensions.

Standard Measure of Length.

The longer a pendulum is, the lower are its vibrations, and *vice versa*; consequently, if a pendulum be required to vibrate seconds, it must have a determinate length. This length, in the latitude of London, has been found by Captain Kater, to be 39·1393 inches of the new imperial measure.

Thaws.

The disappearance of frost, and the melting of the snows, accompanied with rain, are intended by nature to loosen the soil for the expansion of the roots of plants, and at the same time to supply the fluids, which are to form the sap. Where chalk, limestone, or marble abounds either in rocky masses, or diffused through the soil, in the form of sand or gravel, the thaws of this season tend to disintegrate the more compact portions, and set free their carbonic acid, which being washed down to the roots of plants by rain, constitutes an important portion of their nutriment; or at least, serves as a stimulant to excite the orifices of the fibrillage, to imbibe nutritive juices.

American Patents.

[The List of Patents granted in March, has not arrived.)

(Continued from Vol. I, page 170.)

In the mode of sawing shingles, called the "Gauge Saw Shingle Machine," Cheney Read, of Western, Worcester County, Massachusetts, April 2.

In constructing bellows or blowing machines, Elijah Brady, Mount Pleasant, West-chester County, New York, April 3.

In the manufacture of cooper's work, Hiram Waters, Watertown, Jefferson County, New York, April 3.

In an oven for baking over a cooking furnace, Eli Moody, Northfield, Franklin County, Massachusetts, April 5.

In a safety compass lamp, Joseph Feinour and Joseph Feinour, jun., Philadelphia, April 5.

In making terro metallic teeth, Anthony Planton, Philadelphia, April 5.

In the machine for carding wool, Henry A. Shannon, Columbia County, New York, April 5.

In raising water by vacuum, produced by steam, together with an improvement in mill gearing, Joseph S. Fox, Otto, Cattaragus County, New York, April 5.

In the art of distilling by steam, Benjamin Barr, Strasburg Township, Lancaster County, Pennsylvania, April 5.

In the machine for shearing cloth, Isaac Kellog and George C. Kellog, New Hartford, Litchfield County, Con. April 7.

In the mode of transporting carriages, &c., on the inclined planes of railways, Moncure Robinson, Henrico County, Virginia, April 9.

In the thrashing machine, John H. Bennet, of Aurelius, Cayuga County, New York, April 10.

In the fire engine, Ezekiel Daboll, Canaan, Litchfield County, Conn., April 10.

In locking hind wheels of waggons, &c. called "the Franklin lock," George Diven, of Franklin County, Pennsylvania, April 14.

In the mode of obtaining water, Timothy Davis, Lawrence Township, Dearbourn County, Indiana, April 14.

In the mode of manufacturing paper from a marine production, or sea grass, or weed, designated by botanists as "ulva marina," Hayden Collier, Plymouth County, Massachusetts, now in London, England. April 15.

In the mode of making sugar boxes by machinery, Paul Pearson and John Howe, Alma, Lincoln County, Maine, April 15.

In medicine, Fitzgerald Bird, Hancock, Georgia, April 16.

In the machine called Brown's reel for tanning or handling hides, skins, &c., William Brown, Frankford, near Philadelphia, April 17.

In the thrashing machine, Calvin Emmons, of New York, April 17.

In the mortising machine, Wm. E. Marsh, Westfield Township, Essex County, New Jersey, April 18.

In the machine for planting and cultivating cotton, Richard Herbert, Williamston County, Tennessee, April 19.

In canal boats, Benjamin Phillips, Philadelphia, April 21.

Improvement on Benjamin F. Brown's standing press frame, Robert Hoe, New York, April 22.

In the revolving hydraulic engine, Asahel Hubbard, Windsor, Vermont, April 22.

In the cogging machine, James A. Post, of Warwick Township, Orange County, New York, April 23.

In the common carriage axle, Daniel W. Phillips and William Maber, the first of Middlebury, and the last of Covington, New York, April 23.

In the churn, Edward Spain, Mount Holly, Burlington County, N. J., April 23.

In the machine for spinning wool, &c., Arthur Cretchfield, Union Township, Licking County, Ohio, April 24.

A composition for making roofs fire and water proof, Daniel Greer, Pittsburg, Pennsylvania, April 25.

In the lever press, William Linn, Dauville, Pittsylvania County, Virginia, April 25.

In the plough, John Deats, Middletown, Bucks County, Pennsylvania, April 26.

In the method of effecting the rotatory motion directly from the alternate rectilinear motion of the steam piston, Peter Cooper, New York, April 28.

Improvement, called the portable oven, Francis L. Hedenberg, New York, April 26.

In saw mills, Isaiah Call, Woodstock, Windsor County, Vermont, April 28.

Improvement, called the oyster platform, John Vreeland, of New York, April 29.

In the printing machine or roller press, George W. Cartwright, Mount Pleasant, West Chester County, New York, April 29.

In the act or process of testing leaden pipes for conveyance of water, Theophilus Packard, Shelburn, Franklin County, Massachusetts, April 29.

In the corn shelling machine, Wm. Hoyt, Vernon, Jenning County, Indiana, April 29.

In the saddle, Alexander Marshall, Pikeland Township, Chester County, Pennsylvania, April 30.

In the mode of communicating power and motion by means of metallic bands, Joseph Eve, of Augusta, Georgia, May 1.

A machine for sawing hoops, basket stuff, stuff for making riddles, window curtains and window blinds, Phinehas Slayton, Lockport, New York, May 1.

On Isaac Leavitt's washing machine, Eli M. Gibbs, Chenango County, New York, May 1.

In the mode of raising and lowering canal boats, without the aid of locks, William Wiard, Avon, Livingston County, New York, May 1.

In the washing machine, Moses P. Parker, Lowville, Lewis County, New York, May 1.

In the spring and valve marine propeller, William Willis, Charleston, South Carolina, May 2.

In the construction of bedsteads, Silas Hyde, Arcadia, Wayne County, New York, May 2.

In the percussion lock for fire arms, Oren Moses, Malone, Franklin County, New York, May 3.

A machine for cutting plugs for waists and decks for shipping. (This patent was issued on the 28th of June, 1826, and reissued on account of a defective specification, bearing the same date.) Charles Josselyn, New York, May 3.

In the wheelwright's fellow-lathe, John Setton, Pendleton, and James A. Black, Columbia, S. C., May 5.

In the rope reeding machine, Abraham Boring, and William W. Jones, Thornville, Perry County, Ohio, May 5.

In the double shooting gun or rifle, Silas Mosher and Noble White, Hamilton, Madison County, New York, May 5.

In percussion locks, Jedediah Caswell, Manlius, Onondago County, New York, May 8.

In the cooking stove, Abraham Fisher, Claremont, Sullivan County, New Hampshire, May 9.

In the water wheel, for propelling machinery, &c., John Bell, Sycamore Township, Hamilton County, Ohio, May 9.

In the machine for breaking hemp, John S. Van De Graaff, Scott County, Kentucky, May 12.

In the machine for spinning wool and cotton from the roll, William R. M'Call, Vincennes, Knox County, Indiana, May 12.

In making clay pipes, Thomas Wickersham, Newbury, York County, Pennsylvania, May 13.

In tanning and manufacturing hides into leather, Ebenezer Shove, and Thomas Hunt, Locke, Cayuga County, New York, May 13.

In the improved method of making glass furniture knobs or handles, for which letters patent of the United States, bearing date the 9th day of September, 1824, were granted unto John P. Bakewell, Pittsburg, Thomas Bakewell and John P. Bakewell, Pittsburg, Pennsylvania, May 14.

In the boilers of steam engines, James P. Allaire, New York, May 14.

In the machine for cutting leather in the manufacture of shoes, George P. Mitchell, Burlington, New Jersey, May 15.

In the mortar for pounding rice, John Ravenel, Charleston, S. C., May 17.

In distilling spirits from grain and fruit, Jacob Hugus, Hempfield Township, Westmoreland County, Pennsylvania, May 17.

In the machine for cutting pegs, Hezekiah Thurber, town of Painted Post, Steuben County, New York, May 22.

In the mode of making shingles by machinery, called the Howe and Chaffin Shingle Machine, Stilman Howe and Charles Chaffin, Holden, Worcester County, Massachusetts, May 22.

In the saw frame for sawing veneers for cabinet work, and window sash, and window blind stuff, and tenons, May 22.

In the copper-plate printing press, Cyrus Durand, New York, May 22.

In preparing straw, hay, or other vegetable substances, for the manufacture of paper, William Magaw, of Meadville, Crawford County, Pennsylvania, May 22.

In the machine for cutting and forming wooden screws, Stephen Treadwell, Western, Fairfield County, Connecticut, May 22.

In the thrashing machine, Norton Case, North Granville, Licking County, Ohio, May 22.

In the mode or manner of pressing oil out of flax seed, and other oleaginous seeds, Charles How, Moretown, Washington County, Frederic Brewster, of Colchester, and John Johnson, Chittenden, Burlington County, Vermont, May 24.

In the percussion gun lock, Joseph Lawrence, New Berlin Chenango County, New York, May 24.

In the washing machine, George Hancock, Maysville, Mason County, Kentucky, May 24.

In the machine for the manufacture of horse shoes, Robert E. Horbart, Pottstown, Montgomery, Pennsylvania, May 24.

In the marine railway, John H. Greene, Providence, Rhode Island, May 26.

Improvement, being an oil boiler, or bain marie of oil, for use in refining sugar, and for other purposes, William Augustus Archbald, of New York, May 29.

For a double boiler and other apparatus for refining sugar, and for other purposes, William Augustus Archbald, of New York, May 29.

In the filtering apparatus, to be used in sugar refining and for clarifying liquids in general, William Augustus Archbald New York, May 29.

In the mill for breaking and grinding tanners' bark, and corn in the ear, John Montgomery, Sangerfield, Oneida County, New York, May 29.

In the gun lock, Nathaniel Saltonstall, New London, Connecticut, May 29.

In the cylindrical printing press, Charles G. Williams, New York, May 29.

In the mode of manufacturing hat bodies, by machinery, at one operation, George L. Thatcher, of Brooklyn, King's County, New York, May 31.

In machinery for propelling ships and other vessels, Anthony Hermanage, Baltimore, May 31.

New Patents Sealed in 1829.

To James Fraser, of Limehouse, in the County of Middlesex, Engineer, for his having invented or found out a new and improved arrangement of a flue or flues, to communicate with the various parts of culinary apparatus, such as steam, soup, or water boilers, oven or ovens, hot plate or plates, hot closet or closets, and stewing stove or stoves, to render them more compact, and to appropriate part of the said apparatus to effect other useful purposes. Sealed 27th January—2 months.

To John Braithwaite and John Ericsson, of the New Road, Fitzroy Square, in the County of Middlesex, Engineers, for their new invented mode or method of converting liquids into vapour or steam. 31st Jan.—6 months.

To Robert Parker, of Hackney, in the County of Middlesex, a Lieutenant in the Royal Navy, for his having invented an improved drag or apparatus, which is applicable to stage coaches and other wheel carriages, and whereby the motion thereof may be retarded and stopped, when required. 31st January—2 months.

To Joseph Rayner, of Kings Square, in the Parish of St. Luke, Old Street, in the County of Middlesex, Civil Engineer, for his having invented or found out certain improvements in apparatus and machinery for conducting heat, and applying the same in the operations of washing, scouring, cleansing, fulling, dressing, dyeing, and finishing woollen clothes; and in callendering, straining, glossing, polishing, and finishing silks, cottons, linens, woollens, and all other goods, to which the same may be applicable. 5th February—6 months.

To Julias Pumphrey, of Tally Hill, in the County of Worcester, Glover, for his having invented or found out certain improvements in steam engines, and machinery connected therewith, to propel steam boats and vessels, some parts of which improvements are applicable to other purposes. 3d February—2 months.

To Alexander Daninos, of Leman Streer, Goodman's Fields, in the County of Middlesex, for a certain invention for the manufacture of improved hats and bonnets, in imitation of leghorn straw hats and bonnets, which invention was communicated to him by a foreigner residing abroad· 5th February—6 months.

To John Burgis, of Maiden Lane, in the Parish of St. Paul, Covent Garden, and County of Middlesex, Ornamental Paper Manufacturer, for his new invented method or methods of gilding or silvering certain woven fabrics in burnished, or burnished and dead, or matted gold, or silver, and which said fabric may be used as gold or silver, and laced borderings, and for other purposes. 5th Feb.—2 months.

To Richard Green, of Blackwall, in the County of Middlesex, Ship Builder, for his having invented certain improvements in the construction of made masts. 5th Feb. 4 months.

To William Henry Kitchen, of High Street, in the Parish St. Giles, Bloomsbury, in the County of Middlesex, Ironmonger, and Andrew Smith, of York Terrace, in the Parish of St. Margaret, in the City of Westminster, Merchant, for their having invented or found out certain improvements in the construction of window frames, sashes or casements, shutters, and doors, designed to afford security against burglars, as well as to exclude the weather. 7th February—6 months.

To Edward Heard, of Devonshire Street, Vauxhall Road, in the Parish of Lambeth, and County of Surrey, Chemist, for his having invented a certain improvement or improvements in illumination, or producing artificial light. 12th February—6 months.

To Samuel Walker, of Beeston, in the Parish of Leeds, in the County of York, Cloth Manufacturer, for his having invented or found out an improved apparatus, which he denominates "an operameter," applicable to machinery for dressing woollen or other cloths. 20th Feb.—6 months.

CELESTIAL PHENOMENA, FOR MARCH, 1829

D.	H.	M.	S.	
1	0	0	0	Clock before the ☉ 12' 39"
2	4	0	0	☾ in conj. with β in Capri.
4	3	0	0	☾ in conj. with θ in Aquarius.
4	10	0	0	☾ in conj. with ☿ long. 6°. in Aquarius.
				☾ lat. 2°. 48' N. ☿ lat. 3°. 19' N. diff. lat. 31'
5	0	0	0	Clock before the ☉ 11' 47"
5	0	36	0	Ecliptic conj. or ● new moon
7	5	0	0	☽ in conj. with ζ in Pisces.
7	18	0	0	☽ in conj. with ο in Pisces.
10	0	0	0	Clock before the ☉ 10' 33"
10	14	0	0	☽ in conj. with 1 ϑ in Taurus
10	14	0	0	☽ in conj. with 2 ϑ in Taurus
10	20	0	0	☽ in conj. with α in Taurus
11	21	49	0	☽ in ▭ first quarter.
13	0	0	0	☿ Stationary.
15	0	0	0	Clock before the ☉ 9' 10"
15	22	0	0	☽ in conj. with 1 α in Cancer.
15	22	0	0	♀ in conj. with λ in Aquarius
15	23	0	0	☽ in conj. with 2 α in Cancer.
16	16	0	0	☽ in conj. with ξ in Leo.
16	21	0	0	☽ in conj. with ο in Leo.
17	7	0	0	☽ in conj. with ϖ in Leo.
19	5	0	0	☽ in conj. with τ in Leo.
20	0	0	0	Clock before the ☉ 7' 41"
20	1	51	0	Ecliptic opposition, or ○ Full Moon.
20	8	37	0	☉ enters Aries,
20	16	0	0	♀ in conj. with φ in Aquarius.
21	11	0	0	☾ in conj. with θ in Virgo.
22	19	0	0	☾ in conj. with η in Virgo.
24	10	0	0	☾ in conj. with γ in Libra.
24	19	0	0	☾ in conj. with θ in Libra.
25	11	0	0	☾ in conj. with φ in Oph.
6	2	00	0	Clock before the ☉ 5' 50"
27	19	19	0	☾ in □ last quarter.
28	0	0	0	♄ Stationary.
29	13	0	0	☾ in conj. with β in Capri.
30	0	0	0	Clock before the ☉ 4' 36"
31	0	0	0	♃ Stationary.
31	13	0	0	☾ in conj. with θ in Aqua.

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1829.	Thermo.		Barometer.		Rain in inches.
	Hig.	Low	High.	Low.	
JAN.					
26	44	22	29,12	29,06	
27	41	34	29,12	Stat.	
28	42	31	29,51	29,28	
29	38	30	29,53	29,46	
30	40	29	29,76	29,46	
31	37	30	30,24	30,02	
FEB. 1	35	22	30,42	30,33	
2	32	14	30,48	30,46	
3	30	14	29,46	Stat.	
4	41	15	30,34	30,17	
5	45	39	30,25	30,06	,05
6	43	32	30,24	Stat.	
7	46	32	30,02	30,00	,025
8	39	36	30,23	30,16	,175
9	45	27	30,25	Stat.	,075
10	40	34	30,35	30,33	
FEB.					
11	48	34	30,24	Stat.	
12	47	37	30,21	30,16	,5
13	47	39	30,06	Stat.	
14	48	37	30,06	30,05	
15	53	38	30,04	30,00	
16	52	40	29,96	29,83	
17	49	35	29,83	29,72	
18	41	34	29,83	29,76	
19	49	32	29,65	29,52	
20	46	35	29,55	29,50	
21	51	39	29,25	29,11	,3
22	44	36	29,30	29,06	,1
23	40	32	29,46	29,46	
24	40	29	29,48	29,42	
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